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FOURTH OF JULY INJURIES, WITH ESPECIAL REFERENCE TO THE PROPHYLAXIS AND MANAGEMENT OF TETANUS.*

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The single sharp report of a toy pistol, and occasionally the discharge of a revolver, warn us that young America is abroad, foolishly anticipating the Fourth of July, and incidentally and accidentally plugging himself or someone else with the wad of a blank cartridge—thus sowing the bacillus of tetanus.

For a week or two before, and one after, the Fourth of July, these blank cartridge, and occasionally small 22 bullet wounds of the hand are much in evidence in all the clinics. But in New York City they are particularly predominant in a certain institution located in a community of poor, misguided foreigners, who suffer from a superabundance of patriotic fervor. In one day over sixty of these toy pistol shot cases (wounds of the hand mostly) presented themselves at this hospital for treatment. It is astonishing the amount of damage that can be done by the penetrating force of the wad (pasteboard) covering the powder in the very dangerous 22 short blank cartridge, which can be bought over the counter of any and every fireworks establishment and of many book stores, candy, stationary and news stands, by anyone, adult or minor, male or female.

These so-called harmless blank cartridges can penetrate the hand through and through, fracture a metacarpal or phalangeal bone, enter the sensitive, easily infected tissues of the knee-joint, etc. They are a positive menace to sight, limb and life.

Truly here is work for some missionary to save more human lives in one year at home than he could in a generation in some foreign clime. Of course, every pistol shot wound of the hand does not become infected with tetanus. Indeed, only a very small percentage does. Theoretically, all such wounds should be examined bacteriologically for the bacillus tetani. It is rarely found, however, without a culture, and this requires special skill and technic, together with a special apparatus for making anaerobic cultures. Such facilities are not at the disposal of everyone. The treatment, however, should be assiduously carried out as though every case were, or might become infected with tetanus; and every case should be searched diligently and watched most carefully for local and constitutional signs of tetanus.

The wounds should be freely incised, particularly if not seen on the first day of the injury, and thoroughly curetted with a small sharp spoon until all the small pieces of wad, the unburned grains of powder and all dirt have been removed.

If the wad has entered an intermetacarpal space a counter-incision must be made, for through-and-through drainage. Vessels should not be ligated unless they are very large. Having cleaned the wound as thoroughly as it can be done, mechanically, we now resort to chemicals, and irrigate with some mild antiseptic. After next drying the wound thoroughly the entire cavity should be swabbed out with one of the following, named in the order of choice:

1. Pure carbolic acid (Calvert's No. 1, preferably), followed by alcohol.

2. Twenty per cent. tincture of iodin (made by dissolving iodin crystals, 20 parts in ether and alcohol, each 50 parts.)

3. Plain tincture of iodin.

The wound should now be packed with moist iodoformized gauze. A wet dressing is then applied, to be *changed daily.*

The patient and family should receive a serious, plain, truthful explanation and forewarning of the possibilities of a tetanus infection ("lockjaw"), and permission should be thus obtained for a prophylactic injection of antitetanic serum. Ten ccm. are thus injected intramuscularly in the buttocks or

* Written for the American Journal of Surgery.

thigh. The needle should be at the very least one and a half inches long. Thorough antiseptic precautions must be observed. The *syringe* as well as the needle should be boiled and the skin should be disinfected as if for a major operation. Not a single case at the Harlem Hospital receiving a prophylactic injection of antitetanic serum ever developed tetanus. On the other hand, a case treated by freely dusting into the wound an antiseptic dusting powder (dried serum) did develop a serious case of tetanus. She absolutely refused a prophylactic injection of serum. (See author's Case IV., *Bellevue and Allied Hospitals Medical and Surgical Report* for 1904.)

Particular stress is laid upon the free incision. If seen on the first day, or shortly after the accident, owing to the local condition of analgesia following such an acute injury, the wound can be further enlarged without artificial anesthesia. It is rarely necessary for general narcosis; usually cocain or ethyl chlorid spray is effectual.

If it is near a large nerve, the wound must positively be freely opened, care being taken, however, to avoid further nerve injury. In a previous article, (The Rational Treatment of Tetanus, *Medical News*, April 18, 1903), and in the *Medical and Surgical Report of Bellevue and Allied Hospitals* for 1904, I called attention to the probabilities of constitutional tetanus depending to some extent on the location of the wound in relation to a large nerve, in these words: "I am by no means positive that the anatomical seat of the wound does not play an important rôle in the production of the constitutional symptoms of tetanus for again accepting the present view of the pathogenesis of tetanus, any wound infected with tetanus, near a large nerve, particularly if the nerve sheath be opened, will more likely be followed by constitutional effects of the infection than a wound anatomically remotely removed from the seat of a large nerve." . . . . "It is possible therefore that the space in the palm of the hand between the first and second metacarpal bones is a favorable point for an infection of tetanus to produce constitutional effects, because the median nerve in the hand becomes flattened out and much larger at this point; it therefore offers an increased surface, with greater facilities for gathering and conveying the toxins to the cord." The sole of the foot and the palm of the hand are difficult to wound deeply without injurying the nerve sheath of one of the numerous branch-like distributions of large nerves in these regions.

Just how much these two surfaces, the palm and the sole, prone to tetanus-infected wounds, are influenced by their exposure to filth and dirt is questionable. The largest number of tetanus cases that I saw in any one year were from wounds received on a Fourth of July that had been preceded for a week by very heavy rains, during which the streets of New York were never so clean and free from the dirt and filth influences ordinarily supposed to furnish a favorable soil for, and contribute to the dissemination of, the tetanus bacillus.

The symptoms significant of systemic infection are variable. The positive symptoms appear from one day to two weeks after the injury, depending upon climatic influences as well as the proximity of the wound to a nerve and the resistance of the patient. The earliest symptom is the so-called local contraction which takes place near the seat of the wound. If present at all, however, it lasts for such a short time that it is usually overlooked. The most regular symptom that has appeared in cases under my observation has been some respiratory trouble, such as sighing, yawning and other signs of dyspnea in all degrees up to profound cyanosis, spasm of the glottis, difficulty in phonation, etc., all showing spasm, or rather tonic contraction of the muscles of respiration (chest wall and diaphragm). This is not painful, but produces a continuous feeling of tightness. These symptoms have preceded stiffness of the neck, back and jaw by from one day to a week. Mild cases of infection may not get beyond these symptoms before recovery.

Stiffness of the muscles of the abdomen may become so marked as to remind one of the boat-shaped abdomen of meningitis. If dorsal muscles are involved we see opisthotonos, although emprosthotonos, or pleurosthatonos may be marked. The stiffness of muscles of mastication—giving origin to the name lockjaw—may not be present at all, at least a positive diagnosis of tetanus can be made without lockjaw. One case of mine had marked contraction of the orbicularis palebrarum, so much so that the eyes could be opened only with the greatest difficulty. A general stiffness of all muscles is frequently observed. This tonicity usually relaxes when the patient is in profound sleep. Sudden spasmodic attacks, general or confined to certain groups of muscles, come on at variable intervals. They may awaken a patient from slumber, but usually they are precipitated by a sudden noise, a foot-step, a loud voice, a draught of air (as from opening a door); or they may follow an effort of the patient to speak or laugh, etc.

Frequently while watching for symptoms, and sometimes without warning (*e. g.* upon asking a patient to show his tongue), have I seen a patient

suddenly exhibit the most horrible "death-like grin"—the so-called risus sardonicus. Rarely do the patients cry out in the seizures. The order of symptoms is variable, depending upon the location of the wound, and consequent point in the central nervous system first reached by the toxins.

The symptoms described refer to cases of slow invasion, where the period of incubation extends over several days. Some cases of sudden invasion, and overwhelming of the system with toxins develop almost immediately spasmodic muscular convulsions, and death supervenes so rapidly that it is impossible to point to any set of symptoms.

At the very first sign or symptom of constitutional tetanus heroic steps must be taken to shut the toxins off from further irritation of the motor ganglia in the anterior horns of the cord. The so-called "blocking" of the nerve by injecting its sheath with antitoxin does not appeal to me as the ideal treatment, because damage has already been done higher up, in the cord. It is like locking the stable door after the horse is out. As most cases thus treated also received an intraspinal injection it is questionable how much benefit was derived from the "nerve-blocking." Also amputation of the limb, much practiced at one time in efforts to cut off the supply of toxins, never saved a case of tetanus.

Bromids, chloral, etc., do not in any way tend to cure tetanus. They may slightly alleviate the distressing symptoms. I have not had any experience with the intraspinal injection of magnesium sulphate —recently introduced by Dr. Meltzer as a spinal anesthetic. If it will allay the spasms, it certainly is indicated, for the patients apparently die either from the exhausting, emaciating effect of the spasms or from practically "having the life squeezed out." Without venturing too far into unfamiliar regions I would suggest that perhaps a certain amount of sulphates is necessary in the spinal fluid or the motor cells themselves; and the tetanus toxins may chemically affect this supply, for everything points to tetanus as being a bacterio-chemical affair.

In the administration of antitetanic serum my preference is for its intraspinal injection—subarachnoid or into the cord itself—preceded, however, by the withdrawal of as much as possible of the highly toxic cerebro-spinal fluid.

Absolute quiet is essential. The injections are made through a lumbar puncture with an ordinary medium-sized aspirating needle, a "Sub Q," or other all glass syringe, with asbestos wound piston, that can be thoroughly sterilized by boiling. The surface is prepared and the technic carried out under the strictest septic precautions. The patient may be either in sitting posture or on his side. In marked cases of opisthotonos it is sometimes difficult to strike an intervetebral space because of the overlapping of the lamellae.

Inject 10 to 20 ccm. or more, daily or oftener, depending upon the symptoms and the age of patient. I have found the New York City Board of Health's antitetanic serum to be satisfactory, having given 22 subarachnoid spinal injections with it, without a single mishap or infection or complication of any kind.

The serum is not a uniform one. The best and most rapid results follow injections of serum that is of a dark amber-red color. Such a serum is perfectly free from gas or air and is decidedly sticky and viscid. Antitetanic serum is probably the most rapidly eliminated of all serums. It appears almost immediately in the urine; for this reason *very large doses can and should be given and frequently repeated. The appearance of a rash does not contraindicate pushing the injections.*

Finally, in tetanus wasting and exhaustion are rapid and marked. They can be noted from day to day, and even in some cases almost from hour to hour. This wearing out of the physical powers, this body weakness, seems to constitute an important and very grave feature of the dread disease, and directly or indirectly, it seems to aid in producing a fatal ending. Now, the processes of alimentary absorption, of assimilation and elimination apparently are not in the least interrupted nor interfered with. The involuntary muscles of the stomach and intestines apparently are not subjected to the same violent contractions and spasms as are the voluntary muscles. The indication, therefore, is very strong and positive for urgent and forced nutrition and stimulation. The patient should receive from 75 to 150 ounces of fluids or other food daily, by mouth (through a tube passed through a space created by extracting teeth if necessary) or through the nose or by rectum. Milk gruel, beef juice, orange juice, rice cooked until it can be sucked through a tube, and bananas cut into very thin slices and forced between the teeth are foods easily adapted to administration in these cases.

A REQUEST.

Dr. C. F. Roh, Germantown, Neb., requests, for publication, reports of cases of primary cancer of the clitoris, with manner of treatment, result, microscopic findings, etc. Due credit will be given.

THE VALUE OF THE ROENTGEN RAYS IN SURGICAL DIAGNOSIS.

By Carl Beck, M.D.,

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(Continued from the June number.)

As to osteosarcoma, we have learned that in case their origin is in the medulla, we are justified in performing conservative operations, while if the growth starts in the periosteum, an amputation is always demanded because the character of the periosteal type of the disease is extremely malignant and speedy recurrence is always certain. The Roentgen method differentiates these two types with clearness.

In general, the manner in which the osseous tissue is destroyed by the sarcomatous process, is characteristic. The structures of the shadows showing the thin osseous walls and their trabecular formation furnish the standpoint for their skiagraphic study. Osteoporosis of the trabeculæ means decalcification of the bony portion affected, which explains their foggy shadows. Intraosseous tension is responsible for the expansion of the compact osseous layer, which is thus made gradually weaker, and at last almost entirely disappears. Thus we see that it is the abnormal and indefinite outline or even the entire absence of the osseous cells, the cortex especially disappearing, which is more or less characteristic of the various types of osteosarcoma in contradistinction to other bone diseases. (For further details I may refer to "Differentiation Between Inflammatory Processes and Neoplasms of the Bones by the Roentgen Rays," *Annals of Surgery,* December, 1901.) In distinguishing osteosarcoma from osseous cyst, a benign condition with great similarity to osteosarcoma, it must be considered that the cyst is characterized by the regularity of the outlines of its thin cortex, which runs parallel with the oval, spindle-shaped transparency of the distended cavity. Osseous cysts need incision and packing only. In former years legs and arms were amputated for osseous cysts because they were mistaken for sarcomata.

The study of acute inflammatory atrophy of the bone tissues, of rhachitis, osteomalacia, arthritis, petrification and sclerosis of arteries and veins, chondroma, acromegaly, myxedema, Raynaud's disease, goiter, has also been much furthered by the Roentgen method.

During the period of natural development the various changes of the bone tissue can be studied. The observation of the process of proliferation of the periosteum in injuries and diseases of the bones has revealed a series of new facts. What important features the periosteum sometimes shows in displaced fractures, I have already illustrated. ("The Modern Treatment of Fractures," *Medical Record,* March 24, 1906.)

As to foreign bodies, it may be said that their recognition even in the remotest corner of the human body has become a matter of ease.

The same may be said of most concretions. The revolution which the Roentgen method has wrought in lithiasis of the urinary tract, for instance, is nearly as great as in that of the injuries and diseases of the bones. Of course, the chemical composition of the calculi determines the greater or lesser depth of their shadows. The greater the atomic weight, the greater the density, and consequently, the more distinct the shadow. Thus, calculi composed of oxalate of lime show the most distinct shadows. Their shadows are even deeper than those of bone tissue. Next to them we find those consisting of phosphate of lime, while the uric acid calculi give the faintest shadows.

In practice, however, we often find that calculi are not of one distinct type, and, if they are, layers of various degrees of density are observed. Two types are generally present, one or the other character predominating. So it frequently happens that there is a nucleus of uric acid surrounded by alternate layers of the other elements. This explains, why, at least, some dense areas are found in all cases of renal calculus; the same is true when the calculi are of small size.

The question of composition, however, is of less importance than that of bringing the calculous areas as near to the plate as possible, and keeping the field absolutely quiet. These two requirements are attained by the use of the tubular diaphragm which offers another great advantage, that of permitting the passage of the focal rays alone, excluding those rays which emanate from the tubal wall. The disadvantage of the tubal diaphragms is that only small areas can be shown at a time. This disadvantge is little felt in the representation of joints (which should never be skiagraphed without the diaphragm), etc., but in renal skiagraphy it may be responsible for missing the seat of the calculi.

It is evident, therefore, that in skiagraphy of the urinary tract a general exposure must precede that of a limited area, since it cannot be known beforehand whether the suspected calculi are situated in one or in both kidneys, or in the ureters. In other words, the Roentgen plate must *à priori* include an

area which is bounded by the eleventh rib and the crest of the ilium on one side and by the vertebræ and the anterior axillary line on the other. For this purpose plates of the size 10 x 12 or 11 x 14 inches are required. Corresponding with each side of the body, wire letters are placed which serve as landmarks for comparison, and at the same time indicate the side of the body. This is emphasized for the reason that cases are reported in which it has happened that on account of the changed relations of the negative, the wrong side was incised. A few more wire letters may be placed in the renal region, also serving as landmarks for special exposure. It is sometimes useful to attach the same wire letters to the body by means of adhesive plaster strips and to skiagraph them together with the wire letters on the plate, thus being able to compare the relations of the landmarks of body and plate for better localization.

Now, while with the general tentative exposure, only faint outlines of the calculi are obtained as a rule, they may be distinct enough to show at what area the diaphragm should best be adjusted to obtain the most distinct outlines. If the large plate proves to be negative, although other means of examination point to the presence of nephrolithiasis (hematuria), both renal regions must be separately examined with the aid of the diaphragm, several exposures sometimes being required. This, of course, is troublesome, but in view of the great importance of a correct diagnosis, it cannot be omitted. It rarely happens, however, that so many exposures are needed, as a rule the two sufficing for information. In this manner I have also been able to show calcareous deposits which were produced by renal tuberculosis.

The modus operandi in renal skiagraphy is as follows: The general exposure is preceded by a thorough evacuation of the bowels, followed by the administration of a moderate dose of opium. The patient is in the dorsal position on a large plate covering both lumbar regions. For localization a few wire letters are distributed over the plate, the R. (right side) and L. (left side) being placed directly beneath the outer surfaces of the lumbar regions, so that they appear on the integumental margins of the skiagraph. With a pair of calipers their distances from the spinal column and from the ribs are ascertained and transferred on the abdominal surface to be marked there for the proper adjustment of the diaphragm. The head and shoulders are elevated by a few pillows, while the chin touches the sternum. The knees, after being flexed, are well immobilized by sandbags. The exposure should last from five to eight minutes, in proportion to the thickness of the abdominal tissues to be penetrated. The vacuum of the tube should be soft. I prefer the self-regulating tube of Mueller for renal skiagraphy.

The criterion of a good plate is that the vertebræ, the eleventh and twelfth ribs and the outlines of the ileo-psoas muscle can be clearly defined. On the other hand, a plate which shows a number of calculus-like shadows, but fails to represent these points, must be regarded absolutely misleading, and should never be used as a guide for operation. The only thing to do is to try a second and, if necessary, a third or fourth time, the latter, however, seldom being necessary in the hands of a man of a little experience.

Fig. 5. Renal calculi (oxalate of lime) in a boy.

If the plate is good and shows the indications of calculi, the tubular diaphragm is now applied in the same position as advised for the general exposure, with the difference that the shoulder of the exposed side is elevated somewhat more. The diaphragm is best pushed below the rib arch in an oblique direction and in such a manner that its center corresponds with the landmarks indicated on the large plate. The oblique direction permits of pressing the diaphragm deeply into the abdomen, thus reducing the distance between it and the plate to a considerable extent. The time of diaphragmatic exposure

should be two minutes in thin, and four to five minutes in stout individuals.

If the large plate is negative, I resort to a diaphragmatic exposure nevertheless, and if this shows distinctly the criteria mentioned above, I can most positively assure my patient that he does not suffer from nephrolithiasis.

It is desirable, however, that the bones mentioned should show textural details. As a rule, the longer the exposure lasts, the clearer the bones show and the less marked the calculi appear. From this we also learn that rules for the time of exposure can be laid down only in a general way, the instinct of the operator being an important factor in determining details. These views apply much more to the technic of biliary skiagraphy.

Fig. 6. Vesical calculus (oxalate of lime).

The two main components of gall stones, as we all know, are cholesterin and bilirubin plus calcium. Whence their origin still awaits explanation. It is generally believed that these substances are precipitated from the mucous membrane of the gall bladder, as soon as a certain irritation sets in, the irritation being produced by a slight inflammatory process. Added to this is a desquamation of the epithelium caused by infection (lithogenous catarrh). But the peculiar point of this change hinges on the fact that we do not find a process analogous to precipitation as commonly met with, but a process of condensation similar to that of electrolysis. Ergo, we observe the formation of a nucleus, over which other incrustations settle. Many such nuclei, each one with its several coatings, may thus be formed. So large an amount of gall substance may become agglutinated to a nucleus, that finally one solitary concrement, which completely fills the bladder, is the result. Thus stones 18 cm. long and 7 cm. thick have been reported. Some authors have named 7,000 as the greatest number of multiple stones. In a recent case (cholecystostomy) I have counted over 3,000 stones in a very much distended bladder.

The conditions governing these extremely dissimilar formations are unknown to us. The chemical composition of stones is easily proven. As I have shown before, the morphological arrangement is illustrated most clearly by means of the Roentgen picture. The latter also informs us concerning the density of the stones. I wish to emphasize the point that the Roentgen plate proves that the renal as well as the gall stone seldom shows a pure type of composition. In a few stones one may find as many as five layers.

To facilitate matters, however, it is advisable to adhere to some general scheme. Therefore we shall make use of the views of Naunyn as our foundation. Accordingly we distinguish pure cholesterin stones, stones of cholesterin which show separate layers, common gall stones, and stones of mixed bilirubin, and pure bilirubin stones.

Pure cholesterin stones are round and as large as a cherry or a pigeon egg. They rarely show facets. Their appearance is whitish, their surface is smooth, at times warty. On section they show no layers.

The cholesterin stone composed of layers is also whitish, but shows spots of color here and there. In size it is similar to the stone of pure cholesterin, but is more frequently faceted. The section shows a glassy or earthy layer externally. Toward the center a crystalline character predominates. The nucleus itself is generally crystalline. What appears to be of special importance for our research is the fact that the white as well as the crystalline portions contain cholesterin, while the colored portions contain an added amount of bilirubin and biliverdin. In exceptional cases we find a green layer.

The so-called common gall stones are the main contingent of cholelithiasis. Their form, size, and color are subject to frequent change. Oftenest they are of the size of a pin-head. Rarely they attain to the size of a hazelnut. Their exterior may be of a white, yellow, or brownish tinge. In consistency they are so soft that one can easily pulverize them. The nucleus is the softest. The crust is fairly hard. There is no crystallization. The center of the nucleus often shows an elliptical or stellate cavity which contains a yellow, alkaline fluid as long as it is protected within the nucleus. The mixed bilirubin and calcium stones are characterized by their occurrence in groups of twos and threes, never in multiple numbers. If several stones are present, the facet formation predominates. The different layers are reddish- or dark-brown. The nucleus shows a light, crystalline composition. The outer layers contain between 20 per cent. and 30 per cent. cholesterin. The other component parts contain bilirubin and calcium, and traces of iron and copper.

Stones of pure bilirubin with calcium are characteristic in scarcely ever attaining to the size of a lentil. The color is usually a brownish-black, the shape uneven and the consistency soft. This softness often causes them to adhere one to another. Other stones show a steel gray or dark black color with a pronounced metallic radiance. When this constellation of colors predominates the pure bilirubin with calcium stones are of a hard consistency. They are formed by a fusion of the calcium salts of the bile. The salt of bilirubin prevails. At times as much as 60 per cent. of bilirubin with calcium is present. The presence of cholesterin must be regarded as rare.

Naunyn distinguishes small, amorphous or partially crystallized cholesterin stones. They are to be considered as rare. They are never larger than a pea, and possess a nucleus of bilirubin with calcium or of a crystalline structure. There are no layers.

As alluded to before, a type of total purity is rarely seen. As a general rule various elements of various consistency are found. Calcium in greater or lesser quantities, sometimes a mere trace, is present in all stones. In a demonstration of the portrayal of gall stones by the Roentgen rays (N. Y. County Medical Society, October 1899), I had already succeeded in illustrating the different density of stones (vide *N. Y. Medical Journal,* January 20, 1900). By the aid of the rays we are much better able to differentiate between the separate layers of the concrements. I make use of this helpmeet to show you how much more easily the outlines of these structures can be portrayed by the diaphragm than by the method in general use. With this procedure we find that stones of cholesterin which contain very little or no calcium, throw a light shadow. The other stones all throw a shadow of nearly an even density. We may conclude therefrom that stones of all kinds present sufficient impenetrability to the rays, and produce a shadow on the plate.

To augment my former work I have made some experiments to illustrate the difference, as it presents itself, (1) in different gall stones; (2) with different intensity of light; (3) with different numbers of interruptions, regulated by varying lengths of the platinum rod in the Wehnelt interrupter; (4) with different length of time of exposure; and to show the relations in reaction. If the results of these experiments are studied it will be found that only in the pure cholesterin stone is it possible to eradicate an impression already made on the plate. With the other stones I noticed a haziness of the shadow made by the stone only when the exposure was too long, or when the tube was too hard. Thus it can not be the fault of the stones if we encounter difficulties while photographing stones in the living subject. The difficulties are manifold, but I have repeatedly shown that most of them may be overcome. In this instance, truly, patience is a virtue, and he whom dame Nature has not plentifully supplied with it, ought not to busy himself with the rays. But in that case the impatient ones should not generalize, and, as in the fable of the fox and the grapes, belittle the facts. The difficulties are there. They are impenetrability of the liver substance, flushing of the stones with bile, and respiratory motion.

The greatest technical difficulty is presented by the density of the liver, which acts as a curtain to the gall stones. If the projection is taken right through the liver substance, most of the rays are absorbed before they reach the stones. We are unable to shift the liver aside, but in those cases of

hydrops of the gall bladder where stones are found in the fundus, and where the bladder projects beyond the edge of the liver, we see them well. But then the clinical diagnosis *eo ipso* is so distinct, that the rays are of little importance. But in a case of cholelithiasis, with a normally situated gall bladder we are able to point the rays by changing the position of the patient, by placing about three pillows underneath his clavicles in order to cause elevation of the region of the gall-bladder. Thus will some of the rays reach the gall-bladder directly by passing alongside the lower surface of the liver.

If an exposure made by the aid of a soft tube proves to be negative, I repeat it, using a slightly harder tube. Should the second exposure likewise miscarry, I then make a shorter exposure, perhaps of three minutes. Perhaps the stones are very transparent and were eradicated by the long exposure. It might even be advisable to try the ventro-dorsal position.

As illustrated above, we find approximately ninety-five different possibilities of composition in one hundred gall stones. The length of exposure and the hardness of the tube must be regulated accordingly. Thus we are able to employ our indications experimentally only. In other words, a skiagraph which is perfect with one individual may prove entirely unsatisfactory with another. Many concrements which at first show a faint shadow only, grow more distinct on longer exposure, while transparent stones, having been fixed on the plate, will disappear completely with the same length of exposure.

Let us now approach the difficulties which present themselves from the impenetrability of the bile. These details are known. The presence of bile has little effect in those types of stone which are very opaque. But in practice it is usually a fact that in those cases where we find no acute inflammatory condition there is very little bile in the bladder. Surgeons, who must take such great care in aseptic drainage of the bladder before incising it, are well aware of this fact. Without any desire to belittle the importance of this factor in some cases, I believe that in general, it is not of much moment. Furthermore, I have found that a bladder containing stones, and being fairly well filled with bile, leaves a tumor-like shadow on the plate. Similar statements can be made concerning respiratory movements. Assuredly they are distressing, but do not the text-books contain the most beautiful plates of the human thorax? And even though we could represent stones only indistinctly, their recognition would present minor difficulties. On page 129 of my book (Roentgen Ray Diagnosis and Therapy, New York and London, 1904), is a representation of the vesical stone of a boy who, through nervousness, was continually moving about while the picture was taken. Nevertheless, the stone, discounting a slight haziness of outline, was very distinct. The relative dimensions were changed. But this is not the important factor. He who has mastered the technic of rapid exposures may be able to skiagraph a thorax "with bated breath." The movements of the thorax are much checked by the administration of opium.

We perceive that many imperfections still cling to our methods. Still we may say that, with a sufficient dosage of patience, we are able to portray gall stones. A positive picture is a valuable document to both doctor and patient, and should be highly respected. If large stones are found we know that they cannot be removed without operation. If smaller calculi are found some distance removed, we can suspect that they are resting in the bile-ducts. Should repeated skiagraphic attempts fail to demonstrate the stones then we should not hastily draw the conclusion that there is none present, but should rely upon our clinical methods of examination. It is the defects of our technic which are to blame. In lithiasis of the urinary tract, our technic is greatly aided by the use of the diaphragm. Should an otherwise perfect skiagraph show no presence of a stone we may trustfully deny its presence.

Based upon these facts then, I have no doubt that the method just described will be materially benefited by improving our technical armamentarium. If one has proved the presence of a gall stone, then one can demonstrate the success or failure of the cure by a second skiagraph. The practical value of the Roentgen method of diagnosis in cholelithiasis is not a little diminished by the excellence attained by our methods of clinical examination. Still there are a few doubtful cases in which the x-rays alone are able to cast a light on the subject. If we consider the frequency of cholelithiasis, a disease which roughtly speaking attacks 10 per cent. of all mankind, then we can realize that quite a number of doubtful cases remain. Take, for example, the many cases in which the differential diagnosis between cholelithiasis and gastric diseases must be made.

FOR BUBO, AFTER INCISION.

℞ **Formaldehydi (40 per cent. sol.), gtt. ii.**
Hydrogen. dioxidi, fl. ℥ iv.
M. Use freely with syringe.—*Ex.*

SPONTANEOUS AND CRIMINAL ABORTION, FROM A MEDICO-LEGAL POINT OF VIEW.*

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ALBANY, NEW YORK.

In this paper I have embodied some thoughts that are the results of observations made during a number of years in general practice, but, more particularly, during a period of surgical consultation work and operative surgery.

I have no desire to moralize on the frailties of human nature, nor do I wish to criticize members of my own profession, knowing full well what special arguments are brought to bear by women, who, when pregnant, unfortunately, or otherwise, become possessed of the idea that they will not become mothers, are ready to assume any risk, and endure any amount of suffering, if they can be relieved of the product of conception. There are few portions of our professional life, possibly, that give one so much opportunity for thought and careful deliberation. How shall we bring before members of the human family the enormity of criminal abortion, educate them to live on a higher plane, and abhor such efforts to thwart nature in the propagation of the human race? I wish, first, to present, from the many cases that accumulate in one's practice, a few striking instances that have more recently come to my son, Dr. Edgar A. VanderVeer, and myself, then to draw some conclusions regarding the medico-legal aspects of such practice.

CASE I. Mrs. A. B., æt. 25, native of the United States, housewife, married, mother of two children. She came under my observation January 9, 1905. Present illness: began with pain in right side, sharp, acute and extending to back, with modified intensity, but the principal symptom is the pain in pelvis. Upon examination a tumor presented in the right groin, seemingly just under the skin. This enlargement disturbed her when taking exercise, and especially after walking. On bimanual examination, the right side of the pelvis is found to contain a mass extending up from, and including the right horn of the uterus, giving the characteristic feel of an extrauterine pregnancy. With the exception of one slight attack some four weeks ago she does not give the other clinical symptoms (syncope, or hemorrhage) of an ectopic gestation. Patient states that about ten weeks ago she did pass over one menstrual period, but believed herself fairly regular after that. She suffers from occasional headache, and bowels are inclined to be constipated, but with the aid of cathartics and enemata she is quite comfortable. She presents a normal condition of the system, the urine and other secretions being natural. Has lost some flesh and has an anxious facial expression.

In view of the possibilities of a tubal pregnancy, near, or including the right cornu of the uterus, she was curetted in the usual manner, and at this time, also, four large internal hemorrhoids were ligated with silk. But little detritus was secured from the curettage. The uterus itself seemed to be of about normal size, perhaps slightly enlarged, and in a condition of subinvolution. Thorough examination, under the anesthetic, revealed the tumor resting in the inguinal canal, extending up as far as the crest of the ileum, and about the size of a hen's egg, as it presented on the surface. There was a slight erosion of the skin at the apex, showing a tendency to ulcerate. The long axis of the tumor was about parallel with Poupart's ligament. Removal by means of an elliptical incision was decided upon. Separation of the mass from the fascia and boundaries of the inguinal canal was easily accomplished. When the internal ring was reached the scalpel struck a hard substance, which proved to be an olive-pointed bougie, (See Fig. 1), which had evidently been introduced into the uterus, forced its way into the right tube, and out through the abdominal ring, after entering the peritoneal cavity! It had doubled upon itself, forming almost two complete circles, the tip of the bougie lying in the center of the tumor, which was simply a mass of inflammatory tissue. After removal of the foreign substance the sinus was partially curetted, and the incision and columns of the inguinal ring were closed with continuous chromacized catgut sutures, reinforced with three interrupted silkworm-gut sutures, passing through the fascia and underlying muscles. Further than the line of the sinus formed by the tube, the peritoneal cavity was not entered during the operation, and the patient made a good recovery.

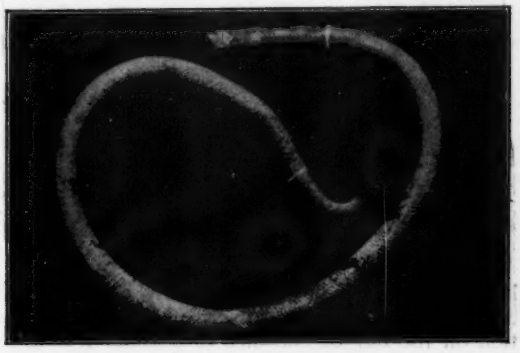

Fig. 1.

Examination later showed the uterus of normal size, with a very slight thickening of the right broad ligament, and the condition of health markedly improved. In every way the subsequent history is uneventful. There was absolute denial on the part of her husband and herself as to when the bougie had been introduced, no incrimination of any physician, nor would the patient admit that she had done anything to bring on an abortion, even after skip-

* Read at the meeting of the Fifteenth International Medical Congress, Lisbon, Portugal, April 19 to 26, 1906.

ping the one period, which she admitted in the history of her case. Why this instrument was used, and whether by a physician or not, it is impossible to prove.

CASE II. Mrs. B. B., æt. 22, native of the United States, housewife, married, no children. Entered the Albany Hospital, April 25, 1905, in the service of Dr. E. A. VanderVeer. Complains of dull dragging pain over lower part of abdomen. Family history; negative. Past history: Has had the ordinary diseases of childhood, otherwise in good health up to the present illness. Menstruation began at 12 years and has always been more or less irregular. No miscarriages. Present illness: Began about a year after marriage, during April, 1904, with severe pain across lower part of abdomen. These pains lasted for two or three days, then disappeared, but returned at intervals of eight to ten days, of late

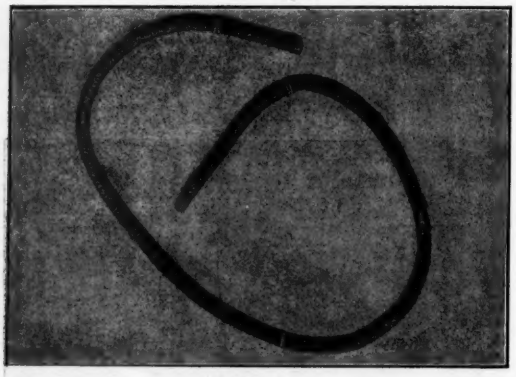

Fig. 2.

being more severe and frequent. No bladder symptoms or irregularity of bowels. Urinary examination on the day of entrance to hospital was negative. The woman and her husband, who accompanied her, positively denied any attempt at abortion. After a careful examination a diagnosis of pelvic inflammatory disease was made and the patient ordered for operation the following morning. Median incision, twelve cm. long, between umbilicus and symphysis pubis, was made. Upon opening the abdomen a dense mass of adhesions was encountered, and it was very evident that the patient had suffered from a general peritonitis. The omentum was drawn down over the intestines and was adherent to the anterior abdominal wall, just above the symphysis. The omentum was loosened up and the small intestines found adherent to each other all through the abdominal cavity. While loosening up these adhesions of the intestines a long fibrous band was felt in connection with one of the coils of intestines, and lying transversely in the peritoneal cavity. This coil of intestine appeared adherent to the peritoneum and abdominal wall on the left side. In loosening up the adhesions between the intestine and peritoneum the scalpel struck a hard substance, which was found to be a hard rubber catheter (see Fig. II), about eight inches long, that had been taken for the fibrous band before mentioned. The catheter was lying in the lumen of the intestine and had evidently been there a long time, for it was encrusted with salts and almost ready to disintegrate. As nearly as could be reasoned out, the catherer had punctured the wall of the uterus, near the right cornu, and had pierced a coil of small intestine, adherent to the posterior wall of the uterus at that point as a result of pelvis peritonitis, due to attempts to bring on an abortion. This, undoubtedly, set up a general peritonitis. The catheter then gradually worked its way into the small intestine and finally found a point of exit on the left side, as above mentioned. In loosening up the adherent intestines they were torn in eight different places, all of which were repaired by Lembert sutures. The uterus, ovaries and tubes, when finally uncovered, were found normal and they were left in place. The wound was closed by silkworm-gut sutures, with a glass drainage tube. The latter was removed at the end of the second day and a rubber drainage tube inserted, which, in turn, was replaced by iodoformized gauze at the end of a week. Following the operation the patient suffered somewhat from shock, but rallied after the employment of our customary methods, such as the infusion of normal salt solution once or twice daily for three or four days, the use of strychnia, rectal alimentation, etc. She left the hospital just four weeks after the operation, in good condition, and entirely recovered.

Upon being confronted with the evidence of guilt, the husband confessed that his wife had taken "treatments," when four months pregnant, to produce an abortion, which procedure was successful, but she had not known a well day since. He did not hesitate to disclose the name of the physician, who, investigation showed, has a reputation for doing such work, yet belongs to a reputable medical society.

CASE III. Mrs. C. B., æt. 45, native of the United States, housewife, mother of five children, no miscarriages. Youngest child nine years old. Regular menstruation up to within six months, when she passed a period and was fearful that she had become pregnant. The second month there was a very slight show, but believing she could feel some enlargement about the pelvis she began to take medicines, and to use local methods for dilating the uterus, in this way hoping her menstruation would appear. Two weeks previous to her admission to the Albany Hospital, November 8, 1905, she had made quite violent efforts as she supposed, to empty the uterus. Just what these efforts were it was impossible to ascertain at any time, but when seen with her family physician, on November 7, 1905, she gave the history of a gradual enlargement for the past three months. At this time she was suffering from acute, general peritonitis, with much distention, and from the physical examination made, as well as she could then bear it, it was thought she might have a pelvic abscess, a pelvic hematoma or possibly an ectopic gestation. The uterus was carefully examined and found empty.

The patient was immediately moved to the hospi-

tal, low enemata employed, with some favorable results, and the abdomen covered with hot packs of 1-1000 bichlorid of mercury solution. Her temperature dropped, the pulse improved, and at the end of thirty-six hours it was thought safe to make a median incision and investigate the condition of the peritoneal cavity. Upon opening the abdomen, by median incision, a general peritonitis presented on the right side, an ovarian cyst on the left, and there was an escape of a considerable amount of serous fluid. Over the surface of the cyst, and laterally, the omentum and coils of small intestine were adherent as the result of the peritonitis from which the patient had been suffering for some time. The appendix was implicated in the mass, but after loosening up the adhesions it was not removed, because of the condition of the patient. The cyst proved to be multilocular in character and its gradual growth had led the patient to believe she was pregnant. Her efforts to relieve her supposed pregnancy had resulted in general peritonitis. The tumor was in the left iliac fossa with the pedicle from the right side, the rare condition met with at times. The contents were drawn off, the pedicle clamped and ligated with silk. The intestines were distended everywhere, and the peritoneal surface was reddened and congested. At a few places a distinct collection of lymph was adherent to the small intestines. These places were left undisturbed. Just underneath the uterus was an abscess which contained a large amount of foul-smelling pus. This cavity was carefully wiped out. The abdomen was closed in the usual manner with through and through silkworm-gut sutures, a glass drainage tube being introduced well down to the bottom of the pelvis. The patient, under the use of normal salt solution by infusion, and other treatment, rallied fairly well after the operation, but at the end of forty-eight hours she had become so distended with gas, which every effort had failed to relieve, that it became necessary to do an immediate enterostomy for her relief. This had the desired effect and in forty-eight hours more she was very comfortable. Gas and liquids escaped from the opening in the intestine, the patient's vomiting ceased, and in every way she improved. This improvement continued for a period of three weeks. The drainage from the fecal fistula indicated that the coil of intestine had been selected low down and that digestion was being performed in a normal manner. There were occasionally normal stools from the rectum. The patient, more particularly at first, was nourished with nutrient rectal enemata. After a period of three weeks assimilation did not go on well; the patient became more and more emaciated, gradually lost in strength; and died January 15, 1906. At no time did she have a high temperature, but her pulse continued rapid most of the time.

These three cases are but a few of the types observed in hospital practice. In private practice, when called to see a case of abortion one is somewhat apt to take rapidly into consideration the surroundings of the case. Is it among the poor, ill-fed, and imperfectly housed and nourished class, say in some hidden recess, or possibly some institution for this kind of work? Is it in some of the homes where the mother has borne many children, and feels that it is impossible to continue longer to bear them? Is it among the middle classes where an effort is made to economize in many ways that a better appearance may be presented in social surroundings, in aspirations for a higher plane in society? Is it among the wealthy, those who have every luxury and little desire for the cares incumbent upon the rearing of a family? All these thoughts present, and the causes that will produce criminal abortion enter into our investigation of the case at once. At the same time we think over, and examine concerning, other causes of abortion, whether predisposing, either alone or with some acute factors, like violent coitus, blows, falls, contusions, jarring of railway travel, operating a sewing machine, lifting heavy weights, rapid stair climbing, sea bathing, etc.

Exciting causes are generally active only in the presence of predisposing, while many predisposing, are inactive except in connection with some exciting cause, as:—

"(a.) Paternal Causes:—Syphilis, extremes of age, debauchery and feebleness.

(b.) Maternal Causes:—Habit of abortion, not due to maternal predispositon, but to continuance of original cause; tuberculosis and syphilis by transmission to fetus or placenta, or by lowering vitality.

Syphilis is responsible for recurrent abortions. Acute infectious diseases are responsible by killing the fetus by the direct action of their poison through the placenta, or the action of high temperature, or the tendency to produce hemorrhage in the placenta by the action of the disease process. Diseases of the heart, lungs, liver and kidneys destroy the fetus by producing passive congestion of the appendages.

Excess of carbonic acid gas, chronic lead poisoning, convulsive diseases, as chorea, eclampsia, epilepsy, excessive coughing and vomiting, are also causes.

Irritable nervous organization, habits associated with extremes of social life, excessive physical exertion, fright, anxiety, are more or less potent.

Hot Sitz- and foot-baths, by dilating the pelvic vessels and causing congestion of the uterus are factors in abortions.

Local Causes:—

Subinvolution;

Acute and chronic inflammatory diseases of the uterus and appendages;

Endometritis and retroflexion;

Uterine tumors;
Adhesion of the uterus to surrounding organs;
Contracted pelvis.

Surgical operations of a serious nature on the pelvic organs during pregnancy have not been followed by abortion in numbers of cases.

(c) Fetal Causes:—
Syphilitic diseases of the membranes.
Hydrorrhea.
Cystic degeneration of chorionic villi.
Placental infarcation or apoplexy.
Degeneration of the placenta.
Abnormal relation of the placenta (placenta previa).
Involvement of the cord, such as shortness, twisting etc.
Death of fetus, caused by:
Syphilis,
Smallpox,
Rarely tuberculosis."

All these being excluded, we now consider in our minds the criminal side, and we are often met with the history that early in married life, or, perhaps, unmarried, traumatic abortion has been brought about. Possibly later this married woman is willing to go to full term, but the uterus has acquired the habit of emptying itself at the third, fourth or fifth month. The effects of the criminal abortion, or abortions, carried on years before, will now be the most prominent factor in thwarting the full fruition of pregnancy. When all the conditions that would spontaneously produce an abortion are excluded, and when we have the following facts presenting to us, from our close observation, etc., that the case is one of criminal abortion, what is to be our attitude? It is not difficult to answer this question.

The husband and wife who have become brutalized in seeking and accepting the services of the debased men and women who resort to the practice of abortions, are participants in the crime, and yet how difficult it is to elicit evidence that, offered before a district attorney, or any officer of the law, will secure deserved punishment to all parties concerned.

Take, for instance, Case I, where it was absolutely impossible to secure an admission from the husband or wife as to what had been done. They would not even admit that an attempt had been made to bring on an abortion.

Again, in Case II, until the evidence was presented to the husband and wife they would not admit in the slightest degree having unlawful treatment; but when confronted with the fact they were sufficiently overcome to tell all, even the name of the physician, a man living in an adjoining State. While the State laws are fairly severe in reaching such cases yet in this case there was no evidence presented, and the physician's testimony in defending himself was taken on the same basis as that of the party who wished to incriminate him. These are very difficult cases to establish in court, and they often fail.

Case III illustrates that frame of mind which many women are in at the time of their menopause, who are unnecessarily frightened, nothing having happened aside from the cessation of menstruation. In many instances they are entirely mistaken, as in this case, and do themselves irreparable injury, even to the loss of life.

There can be no doubt that women risk their lives in each effort to bring about a criminal abortion. They resort to all manner of mechanical contrivances, and, as is well known, sepsis many times accompanies the effort, and they die from a condition of sapremia. All criminal efforts at abortion, although done ever so carefully, place these patients in a dangerous condition, when they reach the hands of the regular practitioner who, while handling the case with the greatest skill, is yet unable to save the life of every individual.

The writer is convinced that aseptic surgery has been utilized to augment criminal abortion. Among the middle, and particularly the wealthy classes, do we see this, for they represent those able to command services possessing a degree of ability, and able to make this procedure apparently aseptic,—perhaps with recovery as to life, but later bringing serious illnesses. Sooner or later in a number of cases, the woman becomes the victim of an ectopic pregnancy. Again, the habit of abortion has been established, as referred to, and she may earnestly hope for a full term pregnancy, but is unable to accomplish it, because of this acquired habit on the part of the uterus.

The laws in reference to criminal abortion are far from being as thorough as they should be, in any country, although in some they are more rigorous than in others.

Beyond a doubt, men in our profession, and lay women who are possessed of skill in this practise, and professional abortionists, however they may have acquired their knowledge, should be prosecuted, whenever they are under suspicion, with the utmost severity. From a medico-legal standpoint they are criminals, and the members of our profession cannot be too thorough in obtaining evidence to fasten this crime upon the guilty parties.

TWENTIETH CENTURY FEATURAL (COSMETIC) SURGERY.

By J. CARLISLE DE VRIES, M.D.,
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To remove the cause with the knife in surgery of the present day is not enough. To remove it and not impair function and feature to any material degree is the end to be attained.

Plastic surgery up to several years ago relieved or removed the hare-lip or placed a nose where the ravages of syphilis had obliterated it, but always with large and plainly visible scars.

The patient now requires a more skilled operation, not only an operation that will restore a poorly developed feature, but surgical work of an artistic nature, work that not alone restores but beautifies and leaves not the slightest mark or scar to show that anything has been done. Cosmetic surgery, or featural surgery as it is more aptly termed, is my theme. To practice it skilfully one must be an adept in art and sculpturing. The present day surgeon must meet these demands or give up featural remodeling.

The building up of sunken noses, the eradication of frown wrinkles, the setting back of outstanding ears, the removal of marks of dissipation, *e. g.*, bags under the eyes, the raising of heavy jowls, the thinning of thick lips, and many other slighter deformities of the features, without the intervention of the knife to any great extent, has not been taken up very largely by the dermatologist or the plastic surgeon. In most instances the surgeon has been content in relieving certain deformities without caring much about whether or not any appreciable scar is left. It is a source of much gratification to the surgeon and the patient to relieve and at the same time leave no mark.

In an experience covering five years, I have operated upon approximately 400 cases of some featural defect, and it is my purpose in a general way to elucidate the technic employed.

Paraffin is our great ally in this work, and when scientifically used the results are truly marvelous. Paraffin as such is not and should not be used. It must be employed in combination. When this product is used alone in fluid form it does only damage. It sets up a violent and painful inflammation and round cell infiltration of the part, which soon gives rise to suppuration caused by stasis and pressure on the surrounding organs. The staphylococcus or other germ life may also gain access through the puncture or cut. Those who have used paraffin in this shape can bear me out. Its melting point is high, and after being rendered fluid by immersing it in its tube in boiling water, it is drawn up into an antitoxin syringe which has been previously heated in boiling water to prevent the entering paraffin from becoming hardened again. After the syringe is filled it is again immersed in boiling water to keep its contents fluid for injection. The part to be treated is rendered antiseptic. Then the skin at the part is treated with hot waer. A wild jab made in a reddened, tender skin with a hot needle, and the burning hot metal introduced under the skin, then the plunger pressed upon and (if luck be with you and the paraffin has not already become hardened), the hot contents of the needle are forced into the part amid shrieks and screams of pain! Molding is impossible on account of the pain, and the result is that you have a hard lump and absolutely no relief of the defect. The method was never fraught with success. It is almost medieval in its brutality. But what will not a woman endure for the sake of vanity!

Next a mixture of equal parts of goose grease and paraffin was tried. The same objection to its use existed, in that it had to be heated and injected hot, and there is the added objection of the smell of boiling goose grease.

Then two-thirds of goose grease to one of paraffin was used, but because of the necessity of employing it hot, and on account of the smell it was soon abandoned.

Something that could be used cold was imperative. Patients were loud in their denunciation of these hot and odorous methods. In many instances suppuration ensued, and the part had to be opened and cleaned out, with an ugly scar and an enhanced deformity as a result.

White oak bark is used but is of little use, and it usually leaves a dark streak along the course of the injection. Kelly of Baltimore uses a white paraffin mixture in vaginal work but it is too hard for featural work.

I am using a mixture of white vaselin, white wax, a shade of glycerin and a shade of paraffin. This is boiled together and allowed to cool and harden. About five or ten drops of carbolic acid are added to every four ounces of the mixture, to render it aseptic. The employment of this mixture has been accompanied by the most glowing success.

The mixture I use is white and of the consistency of butter. A small amount is placed into a syringe shaped like an antitoxin syringe, but instead of being fitted with a plunger it has a screw top arrangement to force the contents easily through the needle.

This syringe is eminently satisfactory. The needle used is short—not more than three-quarters of an inch to an inch in length. A little of the mixture is scraped off whenever it is to be used, the top of the syringe unscrewed, the mass placed therein, the top replaced and the plunger screwed down until the mixture begins to extrude in a fine white string from the needle. Any air bubble must be excluded. The part is thoroughly cleansed with antiseptics; the point of the needle is immersed in carbolic acid solution, then in sterile water. Care must be taken not to inject too much, as would, for instance, convert a saddle-nose into a hump. A little of the mixture is enough. This is molded into shape and the feature is corrected for all time. There is no danger of it melting in hot weather, as the melting point of the mixture is much above 110 degrees Fahrenheit.

It is certainly pleasant to be able to do this kind of work with a cold needle, a cold mixture and a cold skin. The patient now barely feels the point of the needle. I am at the present time experimenting with a fluid medium consisting of white vaselin and glycerin only.

The removal of an aquiline nose is simple. After the usual preparatory steps, an incision about an inch in length is made over the most prominent part. The skin and periosteum are pushed back and held with small retractors. A small bone forceps similar to the ordinary manicure's nail clippers is used to crush the hump or to scrape off the excess bony growth. Sometimes I use a file and file down as much as is necessary. Two or three sutures are applied in reuniting the skin. The wound is covered with styptic cotton and a small strip of surgeon's isinglass plaster is applied. It is dressed daily for three or four days, after which the stitches are removed. There is never any suppuration, and the deformity in every instance is entirely eradicated. There is no scar or stitch mark.

In the hump- or hawk-nose, the septum has grown so long and thick that it pulls down the point of the nose. Here a V-shaped piece is removed from the lower end of the septum, the ends sutured, and a crown stitch is introduced from one side of the nose to the other, through the septum, and back again. Traction on this pulls up the elongated point and holds it there, because the V-shaped piece has been removed; and the deformity is gone.

The technic of all featural operations is practically uniform; the incision, sutures and dressing being in all respects the same. The only difference is the site and the amount of tissue to be removed in order to accomplish the correct result.

Scars are avoided if the incision is small, if little traction is made upon it and if great care is exercised in selecting the silk for suture—which must be either No. 1 or 2, never thicker. Also the sutures should be so placed that the knot, which is tiny, invariably rests to one side of the incision.

For outstanding ears, the skin is removed from the back of the auricles for an extent depending upon the amount of projection from the head and how close to the head the patient desires his ears to be placed. The two edges are sewn together with No. 3 silk, double, and a bandage applied. The wound must be dressed every other day, or even daily. In ten days there is usually complete fibrous union. If there is a white scar it is in an inconspicuous position and the hair hides it.

Wet dressings are more conducive to slow healing, scar formation and the development of suppurative processes; therefore in all featural work the dressings must be dry and kept so.

For raising the sides of the face, for removing hanging jowls and to change facial expression, the incision is made in the hairy temporal region and a diamond-shaped piece is cut out at one side of the artery, and No. 3 silk, double, is used. The result is perfect.

Bags under or over the eyes are removed with a very small and sharp pair of scissors. The incision must be semilunar, following closely the edge of the eyelid. It does not matter how ragged the edges are, the result is perfect and no sign is left of the original incision. No. 1 silk, single, is used. Care must be exercised to see that the entire incision is closed. No dressing is applied except a thin strip of surgeon's plaster. Swelling may manifest itself for a day or two, but there is never ecchymosis or oozing.

Any swelling in any part of the cheek, any tumor or occlusion of a sebaceous duct is removed by making the incision inside the mouth over the most prominent part of the swelling and evacuating the contents. One suture usually suffices.

Thick lips are made more presentable by making an incision just beneath the junction of the skin of the lip to the mucous membrane and drawing the edges together. No dressing is required. Before incision is made it is well to freeze the part with ethyl chlorid to prevent pain.

The technic in these operations is extremely simple, and the result invariably gratifying to the patient and the operator.

Another simple operation is thinning the point in an overly fat nose point, or where a droop to the point is present. This is done by removing an angu-

lar piece of the skin and mucous membrane on either side of the cartilaginous point and bringing the edges together. This raises the point of the nose at the same time that it narrows it.

The prognosis is uniformly good, except in syphilitic, hemophiliac and tuberculous patients. In the last the prognosis is, however, guardedly favorable. In the other two it is invariably bad, and operations in these cases should never be attempted. Embolism has never occurred in any of my cases.

PLASTER OF PARIS, AND HOW TO USE IT.

BY MARTIN W. WARE, M.D.,

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(Concluded from the June Number.)

PLASTER OF PARIS IN DENTAL SURGERY.

All varieties of commercial plaster of Paris will make good models, but none other than recalcined plaster, sold in the shops under the name of French Dental Plaster, is suitable for making impressions.

MIXING THE PLASTER.

Place four ounces of water in a bowl, preferably of rubber; but a glazed porcelain bowl will answer the purpose. It is advisable to have the plaster set as quickly as possible, therefore

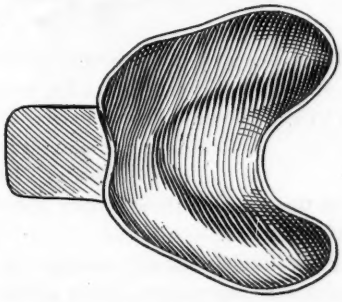

Fig. 60. Dental impression tray for endentulous upper jaw.

add a pinch of salt, alum or chlorate of potash. If none of these is at hand warm water will hasten the setting. The addition of a few drops of essence of peppermint to the water will dispel the unpleasant taste of the plaster in the mouth. Take up the plaster on an ordinary spatula and sprinkle it on top of the water. Allow the plaster to be completely taken up before repeating this procedure; and do this a number of times until the water has absorbed all the plaster it can possibly take up. By following this slow method air bubbles will be prevented from forming. Then stir the mass with a spatula, *in one direction only,* until it has the consistency of a thick cream. Place it in the impression tray (Figs. 60, 61), which should be previously selected to fit the mouth as nearly as possible, so that the minimum amount of plaster should be inserted in the mouth. If the impression is to be taken of the upper jaw the tray should be first pressed up against the posterior aspect of the mouth, and subsequently the anterior

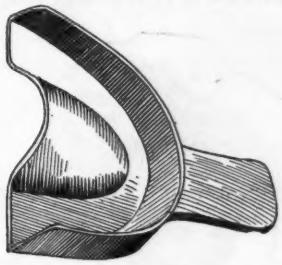

Fig. 61. Dental impression tray for upper jaw, some teeth being present.

part of the tray should be pressed into position in front. This will cause all surplus of plaster to be forced out of the mouth, thereby preventing gagging or nausea to a great extent.

PREPARATION OF THE PATIENT.

Gagging, nausea and vomiting may be more certainly guarded against by spraying the palate and mouth with a half of one per cent. solution of eucain or cocain, supplemented by the internal administration of a dram of aromatic spirits of ammonia. In sensitive patients, the best guarantee against nausea, etc., is the injunction to have the stomach empty.

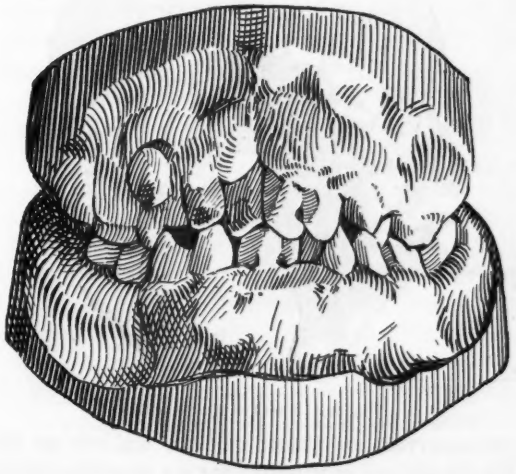

Fig. 62. Model of hypertrophied jaw.

Plaster intended for impressions of the lower jaw should be of such thick consistency that

the tray may be inverted without the plaster falling therefrom. In taking an impression where it is impossible to withdraw it in one piece, it is desirable to mix with the plaster from one-third to one-half of ordinary precipitated chalk. This will cause the impression to fracture more readily and thus permit of replacing the parts afterwards, to make the model. In the case of cleft palates where a large fissure exists, it is advisable, prior to taking the impression, to either obliterate the fissure with softened beeswax, or absorbent cotton, or to bridge it over with adhesive plaster, the buccal surface of which must be oiled. The wax and cotton are apt to adhere to the impression, but if these precautions are not observed, the plaster of Paris will run up into the fissure, and in withdrawing it a laceration of the soft parts may ensue. When the fissure extends to the soft palate an impression of the hard parts is all that is required, as the posterior portion is subsequently modeled in the mouth.

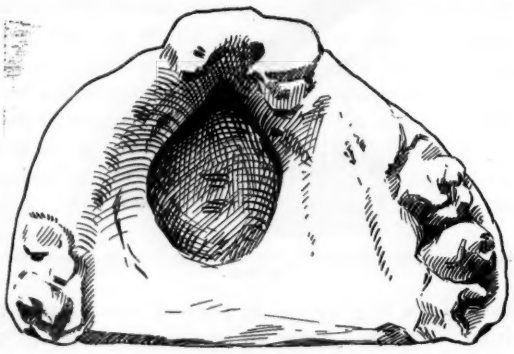

Fig. 63. Model of a syphilitic perforation.

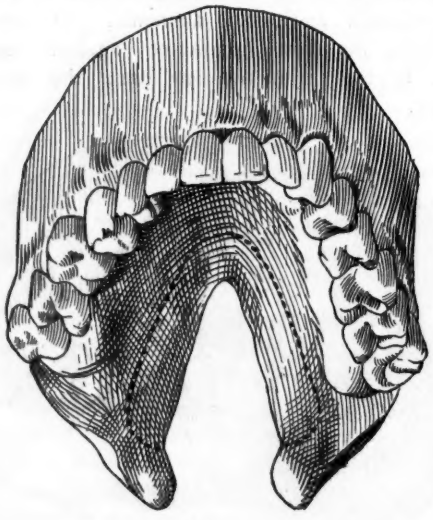

Fig. 64. Model of a cleft palate.

DIFFICULT IMPRESSIONS. Wherever there is a chance that the impression will be difficult to remove, as in the case of tumors of the jaw, it is advisable to oil the impression tray before placing the plaster in it. This will allow the tray to be removed, leaving the hardened impression in the mouth, thereby permitting the operator to cut it away in sections, which can be replaced in the proper position and a model made therefrom.

IMPRESSIONS FOR FRACTURE OF THE JAW. Impressions of a fractured jaw should not be taken in plaster of Paris, for modeling composition is far superior for this purpose.

Where an operation is contemplated, it is advisable to take an impression of the mouth prior to the removal of the pathological condition (tumor), as this will serve as a guide in making the prosthetic appliance thereafter.

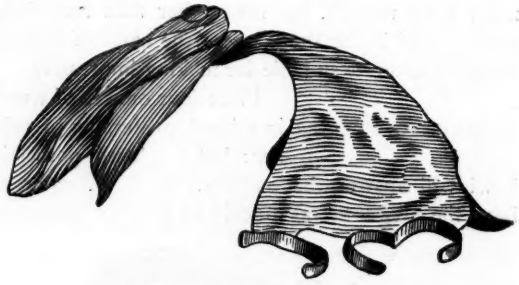

Fig. 65. Kingsley obturator attached to plate.

MAKING THE PLASTER MODELS. In order to obtain the best models it is absolutely necessary that the impressions be perfect, that all of these are in their proper position before the model is poured.

Plaster for models should contain the same ingredients as for impressions, but it should be somewhat thinner in consistency since it has to be poured.

THE SEPARATING MEDIA BETWEEN IMPRESSIONS AND MODELS. To facilitate the separation of the impression from the model, a separating medium is necessary, so that one does not adhere to the other. Various solutions can be utilized for this purpose. A very thin alcoholic solution of shellac, or water glass, or ordinary soapsuds, colored with red ink to thereby indicate the line of demarcation between the impression and the model, will answer the purpose. Oil and vaselin should not be used, for they soften the surface of the model.

With a camel's hair brush, coat the impression with any of these separating materials and allow it to dry. Then soak the entire impression in water of the body temperature. The object of this step is to facilitate the flowing of the model plaster into all the small crevices, which will not happen if the impression is dry. Place a small quantity of plaster, intended for the model, on the highest portion of the impression, then tap the impression gently on the table or with the handle of the spatula, so that the plaster will flow down into all the crevices and depressions. Repeat this as often as is necessary to build the model to the desired form. This will prevent bubbles, expel the air from the crevices of the impression and give a most satisfactory model.

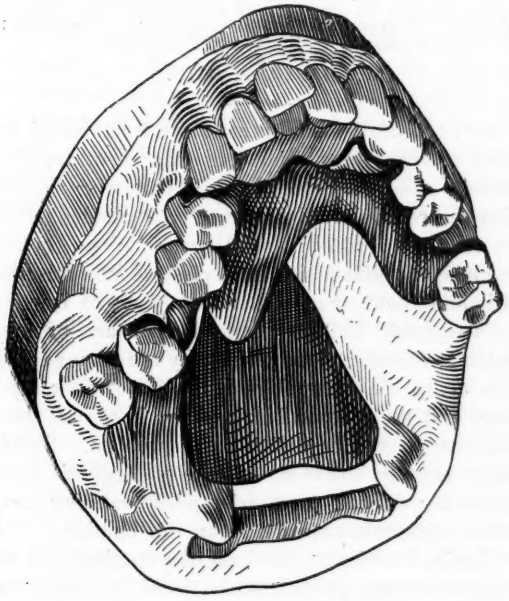

Fig. 66. Kingsley cleft palate obturator covering the cleft.

After the plaster has hardened, place the whole in a pan of water, and allow it to boil five minutes. The expansion caused by the heat will facilitate the separation of model from impression. If it is a simple impression without undercuts to cause adhesion, merely tapping the model with the handle of the spatula will effect the separation. If the separation is hindered, however, by any irregularities in the impression, the latter has to be cut away in small pieces until the line of demarcation of the separating material is reached. This may be supplemented by occasional tappings with the handle of the knife to loosen the parts.

In making a plaster model from a wax, or modeling compound, impression, as in fracture of the jaw, wet the impression, pour the plaster in the same manner, allow it to set, place in a pan of cold water and, *do not boil,* but merely heat it until the impression material is thoroughly softened, when it can be easily withdrawn from the model.

Models should be neatly trimmed and dusted with talcum powder, to give them a smooth surface.

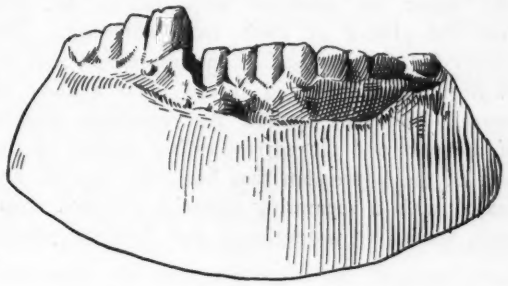

Fig. 67. Model of a fracture of the jaw.

INTERDENTAL SPLINTS. The first requisite is to take an impression in wax or modeling composition and then to make a plaster model of both jaws. Then the model of the fractured jaw is so cut and replaced on an appliance for that purpose, known as an articulator, as to bring the teeth of the upper and lower jaw in normal occlusion. On these models the model of the interdental splint is made in wax, and from this it is made in vulcanite or cast in pure tin. It is advisable to paint the cusps of the teeth on the models with several coats of shellac or to burnish over the cusps with No. 60 tin foil. The object of the latter procedure is that the indentations in the splint shall be a trifle larger than the teeth in the mouth, thereby permitting the reduction of the fracture more readily when the splint is inserted.

If it is a difficult or painful procedure to insert the splint in the mouth, and reduction is possible

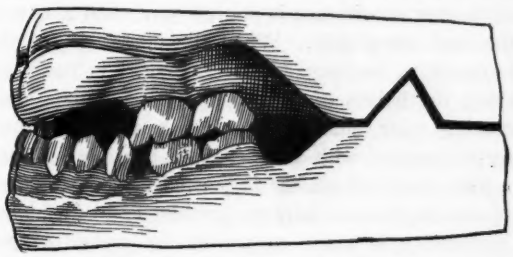

Fig. 68. Model of a primitive articulation in plaster.

forthwith, an anesthetic is administered to relax the muscles. When reduction is not possible at the first sitting, the splint may be inserted and a tight Barton's bandage placed about the head. In a few days normal occlusion will thus be attained.

PLASTER MODELS OF THE BODY.

When the impression is to be made of a complicated part of the body, as a foot or hand, it is desirable to make it in two sections, and, furthermore if the part be covered with hair it had better be anointed with vaselin to prevent the plaster of Paris from adhering. The plaster for the first half of the impression may be of firm consistence and spread upon a layer of gauze. This half applied, the remaining surface of the part and the corresponding surface of the half of the impression that has been applied, are coated with a separating material (colored soapsuds, shellac or waterglass), and then the plaster

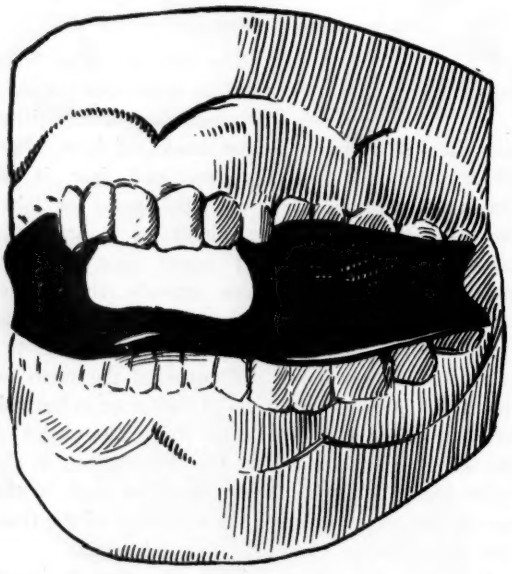

Fig. 69. Interdental splint with fenestra in the center for feeding.

of thinner consistence is poured over until it covers the part completely. When the plaster is set the impressions are separated. A model is made by tying the halves of the impressions together after coating their inner surfaces with separating material (applied with a camel's hair brush), and then a thin cream of plaster is poured into the interior of the impression, into the furthest end of which a perforation is made to permit the escape of air, thus to avoid the formation of bubbles.

REPAIR AND PRESERVATION OF MODELS.

Any broken model may be repaired with cement. Models may be prepared for preservation by boiling in a solution of alum, and then coating, when dry, with shellac.

PLASTER IMPRESSIONS AND MOULAGES OF SKIN DISEASES.

To make wax models (moulages) of skin lesions, an impression is first made in plaster of Paris. This impression, when hard, is moistened in hot water, and then a mixture of melted beeswax, and spermaceti, equal parts, is poured on the impression. The wax model is easy to separate from the moistened impression. The coloring is subsequently imparted to the wax model with pigments.

DIAGNOSIS OF FRACTURE OF THE SKULL.

BY W. A. BRYAN, A.M., M.D.,

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It is practically certain that more fractures of the skull are diagnosed contusions than there are contusions classed as fractures. It is further certain that the reason for this cannot be attributed solely to failure to make careful examinations, but to the inherent difficulties of this class of fractures; for it is here that our pathognomonic signs of fracture so frequently fail us. Indeed, they are of least value at the very place where they are most needed. The dense, close coverings of the vault of the cranium, and the inaccessibility of the base contribute likewise to render difficult the problem. Simple cases are seen where no mistake of diagnosis could be made; difficult cases arise where nothing short of an exploration can determine our opinion.

Again, injuries to the scalp, the cranium and the cranial contents produce such divers symptoms that we cannot rely upon them to clear up the mystery. There are fractures, even severe and fatal ones, that do not produce sufficient mental disturbance to put the patient to bed, or prevent him from walking home, while on the other hand most serious and calamitous cases of concussion are observed, with no suggestion of fracture. Concussion renders these patients unconscious, hemorrhage by pressure produces paralysis, and still no fracture may be present. Hence, this paper will not attempt to discuss the differential diagnosis from this standpoint, except in the clearest cases.

Fractures of the base, except rare possibilities, show neither crepitus, spontaneous displacement, nor preternatural mobility. A force sufficient to produce the fractures, pure and simple, or combined with fracture of the vault, will essentially result in considerable symptomatic functional disturbance of

the brain. Hemorrhage is a sign of uncertain value, whether it come from the nose, the mouth or the ear. It has more weight when prolonged than when brief. From the nose it may be due to the lacerated mucous membrane, or to this in conjunction with fractured nasal bones or cartilage. From the mouth it may be due to injured mucous membrane or teeth, or proceed from the posterior nares and the nasopharynx, as well as from a fractured base. From the ear it may come from a lacerated drum membrane, or from fracture of the bone lying external to the mastoid cells with no injury to that lying between them and the dura.

Subcutaneous hemorrhage also has diagnostic value as a sign in these fractures. Fracture of the anterior fossa produces ecchymosis of the skin covering and surrounding the orbit, with or without protrusion of the bulbus oculi, with or without subconjunctival hemorrhage. Suggillation, either of the conjunctiva or eyelid is unreliable, but hemorrhagic exophthalmos is, usually, a most valuable and reliable evidence that the roof of the orbit is fractured, although this symptom may result from fracture of the external wall of the orbit or injury to the lachrymal gland. Suggillation of the pharynx is rare and a sign of minor value. It occurs also over the mastoid process and the sides of the neck, where, as elsewhere, its chief importance is of a suggestive rather than a positive nature.

The presence of a paralyzed cranial nerve, either sensory or motor, means fracture of the base. The facial is the most frequent nerve giving this sign, but the optic, the olfactory, the second or third branch of the fifth, the auditory, and now and then the abducens—although Von Bergman thinks this one more frequent—are so situated as to make it worth while to investigate their function in uncertain cases. And yet we must admit that paralysis of these nerves does occur authentically from contusion of the brain. Still the most absolutely unmistakable sign is the escape of cranial contents, which usually is cerebrospinal fluid. It may be found flowing in great quantities. Albert quotes a case that discharged nearly three hundred ounces in twelve days, or an average of twenty-five ounces per day. It flows more freely when the fractured side is down; it flows more profusely when the patient makes vigorous expiratory efforts, hence, when coughing, straining, screaming or crying. It is also increased by pressure on the veins of the neck. This fluid must not be mistaken for serum or mucus. The latter is more viscid and tenaceous, and could hardly mislead; the former is not so easy to differentiate. Serum contains more albumen, cerebrospinal fluid less. Serum usually does not flow many days; cerebrospinal fluid does. Serum contains a low percentage of sodium chlorid; cerebrospinal fluid a high percentage, and this gives the most reliable means for a test, which is made by the use of a silver nitrate solution. Cerebrospinal fluid has a trace of a copper-reducing substance, serum has not. The specific gravity of cerebrospinal fluid is 1,002, while that of serum and inflammatory exudations is much higher.

Fractures of the vault offer us at once advantages and disadvantages, as compared with those of the base, the former from easier accessibility, the latter since the collateral evidences are much reduced in extent and value. However, it is generally thought that vault fractures are easier of diagnosis than those of the base. Pressure symptoms are well known to have a very definite value, not only in determining the presence of fracture, but also in its exact localization. Still not every paralysis must be attributed to such cause. If pressure come on suddenly at the time of hemorrhage, it is due either to fracture, with more or less depression, to relatively profuse hemorrhage, or to contusion of the brain. If the symptoms come on slowly, and shortly after injury, they are due to a minute hemorrhage continuing some time. If they come on after a few days or weeks, they are due either to degeneration of brain substance, or to cerebral abscess. If they follow after some months, either a tumor or pressure by callus is the source of trouble.

To illustrate I quote here a case reported by Albert (*Surgical Diagnosis,* pages 34-35): "A man run over by a cab, was brought to the hospital without any skin wound, depressed fracture, or disturbance of general condition. After six hours, paralysis, first of the left, next of the right extremities, supervened. This was followed by coma and death within three days. Autopsy showed an extravasation of blood between the left parietal bone and the dura. The blood clot weighed one hundred and forty grammes, and caused a flattening of the brain. The surface of the right hemisphere was bruised by contrecoup." The author comments then on the case, that the cause is arterial hemorrhage, that the middle meningeal artery can be ruptured without injury to the cranial bones; that this rupture may occur on the side opposite to the blow; that a sinus may tear and bleed, but not excessively as in arterial hemorrhage. Why did not the paralytic symptoms occur at once? This fact is characteristic of hemorrhage from the middle meningeal; "the blood must first separate the dura from the bones before it can balloon out the membrane and

exert pressure upon the brain. As soon as this is accomplished, pressure symptoms rapidly develop. But why did the paralyis appear in the left extremity when the left hemisphere was injured? With compression of the left hemisphere a right hemiplegia was to be expected. Probably the contusion had previously impaired the circulation of the right hemisphere, and the pressure was therefore more readily felt in that region. Was the left hemiplegia not the result of the right-sided contusion of the brain? No, for if it had been, this hemiplegia would have appeared immediately after the injury."

Of all fractures of the vault it may be said that multiple or comminuted fractures are the most easily recognized, and that depressed fractures come next, and yet I was called upon a month ago to operate upon a man who had received a blow upon his head, walked of his own accord to a physician's office, who made a prescription or a dressing for his head injury, when the patient went home, suspecting, it seems, no serious injury. At home he walked around attending to his affairs, and after a few days noticed some difficulty with his opposite hand. A second physician was called in passing, and then, or a few days later, made a diagnosis of fracture, advising operation. This was refused until the whole side became paralyzed. It was three weeks from the date of injury when I operated. I found that infection extended to the brain, degeneration had occurred, and pus was discharging from the brain substance. This fracture was distinctly depressed, about the size of a quarter, and situated immediately above the parietal eminence.

One may be led astray in attempting to determine whether a depressed fracture exists underneath a hematoma. This applies particularly to subpericranial hematoma where the blood is bound down to a limited area, and is surrounded by a border wall of infiltration. In hematoma between the occipitofrontalis aponeurosis and the pericranium there is unlimited range for spreading, and the hematoma is not so well defined or the diagnosis rendered more difficult. In those limited to the extra-aponeurotic tissues, the entire mass can be moved with the scalp and error eliminated. Now, if the hemorrhage is subpericranial, the finger passing from the harder periphery to the soft center may give the surgeon a false opinion as to the existence of a depressed fracture. Only experience, skill and caution can teach us to avoid this error. Chagrin may be spared by pressing steadily and firmly on the surrounding ridge, which may flatten it more or less completely at various points.

For fractures of the inner table we are forced to rely on indirect evidence alone, as there is no positive means of determining such a fracture by local external examination.

In any fracture of the vault, if it is compound, the diagnosis becomes much more satisfactory. By sliding the nail or the handle of a scalpel over the injured surface any unevenness may be detected in fissures of the skull. Likewise a narrow dark line on the bone, due to clotted blood and not removed by sponging, or a similar line from which pressure on the bones causes a little fluid blood to well up, means fissure of the bone. Compound fractures of the vault give the same possibility for escape of cranial contents as fractures of the base, but by no means with the same relative frequency. Also we find that cerebrospinal fluid escapes occasionally, and accumulates beneath the scalp in cases not compound. When present, it proves the existence of fracture. It may accumulate at once, or delay for several days. It increases continuously, or remains constant on reaching some uncertain size. It gives no local or general signs of inflammation, and shows no indurated margin, such as is found in hematoma. It becomes tenser from any cause increasing brain pressure; if very free in its communication, it pulsates and is known as traumatic meningocele. Emphysema situated over the brow or mastoid region and the neck signifies that the bone covering the antrum of the mastoid or the frontal sinus has been fractured, although that lying between them and the dura may be uninjured.

SURGICAL JUDGMENT.

That qualification which of all others I think physicians admire and respect most in a surgeon is *judgment*. It is a difficult quality to describe in words; but it consists essentially in knowing whether or not an operation is required in the case under consideration, in deciding upon the best time for performing the operation, and in selecting the special form of operation to be employed. Needless to say it is a difficult quality to acquire, and it is almost an impossibility for one surgeon to impart it to another. Although it may be developed, it appears in its origin to be largely intuitional; and those who are born without it rarely become distinguished for anything beyond the mere manual dexterity with which their operations are performed. The operations performed by such surgeons may be the most brilliant successes, but many of their patients are very apt to die.—John B. Deaver in *Medicine*.

REPORT OF A POSSIBLE CASE OF INTRA-TRACHEAL ARTERIO-VENOUS ANEURISM, OR EXOPHTHALMIC GOITER.*

BY W. SOHIER BRYANT, A.M., M.D.,
NEW YORK.

The patient, a nervous woman about 25 years old, was first seen by me in consultation, May 1, 1904. She then heard the acoumeter in the right ear 5 inches; and after catheterization, 4½ inches. The right membrana tympani was very thin and the malleus indrawn and rigid. The left membrana was thin and depressed with a large calcification. The patient complained of tinnitus and pain in the ear.

July 13, 1904. Her surgeon informed me that 14 months before the patient had had her left temporal region opened in order to enter the middle cranial fossa and tie the cavernous sinus. She then had pulsating exophthalmos and a diagnosis was made of arterio-venous aneurism in the neighborhood of the cavernous sinus. This operation was stopped on account of the serious bleeding from within, after the finger had felt a pulsation at the apex of the left petrous bone. Nothing further was done, and the wound was closed. In December, 1903, both common carotids were tied within ten days of each other.

History as given by the patient. The left ear had annoyed her about ten years, first with pain, later with tinnitus also. She had had some mastoid operation at this time in Russia. She has had left-sided facial paralysis two years, dizziness one year. She complains of some loss of sensation in left side of face and of severe tinnitus which prevents sleep. The patient says that she hears a variety of noises, besides a constant low-toned "sizzing." Half the time there is a "hammering" in the ear. Working increases the rate of the "hammering." Stooping makes the tinnitus worse, and dizziness comes on with headache in the mastoid wound. At other times, there is headache in the vertex and occiput. She cannot chew on the left side because it increases the tinnitus. The dizziness at first had its direction from right to left. Now it is sometimes like "black water" before the eyes, mostly on the left. The dizziness, she says, followed the temporal operation. For two months, on closing the right eye things have not appeared clear to the left one. The patient says she has pain between the meatus and the mastoid scar, and occasional pain in the left ear.

Physical Examination. Exophathalmos in both eyes is quite marked. Slight divergent strabismus. The scar seen on the left temple region is convex upwards. There is another scar over the mastoid, near which there is a very prominent superficial vein, and a scar on each side of the neck where the carotids have been tied. There is a pulsating area measuring 2 x 4 cm., which can be seen behind the small, pointed left mastoid process. The visible pulsation extends down from the occipital superior curved line. The pulsation can be felt over a much larger area as far as the median line and the spinous process of the fifth cervical vertebra. Pressure on the corresponding portion of the right side of the neck makes the tinnitus louder, the patient said. A slight pulsation can be seen and felt in this area. Auscultation reveals a loud souffle over the pulsating area of the left side of the neck. On the right side a faint souffle is heard, most marked at the upper end of the right pulsating area corresponding to the posterior end of the digastric fossa. Compression of the left external jugular vein diminishes the tinnitus. The vein is empty when uncompressed. Compression over the carotid in the upper triangle lessens the tinnitus. Compression of the right external jugular shows it to be of normal caliber. Compression of the left vein fills up a large venous tumor which swells out behind the angle of the jaw and lifts the auricle. The arterial pulsations are strong and can be felt beneath the upper half of the left vein, and a strong pulsating souffle is heard on auscultation in the course of the vein, especially in the supraclavicular fossa and the lower half of the neck. Auscultation in the left ear reveals a pulsating souffle. The carotid sounds and pulsation are very faint. The cause of the audible tinnitus appears to be arterial pulsation of an aneurism of the vertebral artery. Tympanic inspection shows the left tympanum practically filled up. No landmark is visible. Posteriorly, it is whitish, hard and sensitive, with a few bloodvessels running over it. Perhaps this is the promontory. Anteriorly, round red compressible bodies appear. There is a depression internally to this which looks like the mouth of the Eustachian tube. The right ear shows signs of chronic catarrhal otitis.

On the 17th of July the pulsating area had increased and could be seen extending from the angle of the jaw to the median line, posteriorly, and from the upper border of the soft parts above, to the edge of the trapezius muscle posteriorly, down to the clavicle, and in front of the median line. Less pulsation was visible on the right side of the neck. Pulsation could be seen over the left mastoid process, extending two centimeters above the meatus.

* Read before the Section on Otology, New York Academy of Medicine, April 12, 1906.

A pulsating vein ran anteriorly to the inner end of the clavicle. There was also one in the right side of the suprasternal notch. The heart sounds were normal. The pulse was 90. The souffle was heard above the left clavicle and extended well up over the cranial bones. After the patient had rested a few minutes, the pulsation and souffle diminished considerably. A souffle could be heard posteriorly around the base of the skull as far as the right mastoid process. The heart sounds were heard as far as the upper border of the left clavicle. Above the left clavicle both the heart sounds and the souffle were heard as high as the lower border of the trachea. Above this point, only the souffle was heard. On the right side the hum was audible in the superior anterior triangle. It increased on the right side of the neck with pressure on the left side. The vibration could be readily felt with the hand. Pressure on the pneumogastrics slowed and lessened the tinnitus. Pharynx: The left tonsil pulsated up as far forward as the anterior pillar and into the mandibular fold. The lateral veins of the nose, the temporal, frontal, and cheek veins were large and prominent.

March 8, 1906. The facial paralysis is still present. The patient complains of pain and buzzing in the head. The exophthalmos is slight. She looks fairly well. She says all the trouble is in the neck. There is pain in the left side of the neck and in the head. The pain comes and goes. For the last two years the pain has been worse. Pressure behind the left mastoid tip at the entrance of the digastric fossa stops the buzzing. The patient says that she has had pain in the mastoid all the time for the last eight years. When the buzzing stops in the left ear, it is noticed slightly in the right ear. Pressure in front of the left mastoid stops the buzzing, and also pressure below or in front of the mastoid. The tinnitus is very loud, pulsating, buzzing, sometimes a "crying or cooking." The headaches follow or come with the tinnitus. In the left ear the watch is heard on contact. The left tonsil is large. Auscultation shows that the souffle at the occiput is loudest on the left side.

March 20, 1906. There is more exophthalmos to-day. Pressure on the right pneumogastric stops all the buzzing tinnitus in the left ear. The effect of pressure on the left pneumogastric is not so marked. There is no audible difference in auscultation of the left mastoid upon pressure on the right pneumogastric, but at the same time the patient says it stops the tinnitus. The effect of the pressure is probably not due to arterial compression. The pulse rate is not lowered by it. Pressure on the right pneumogastric stops the left-sided headache when it is not very bad. Pressure on the left side over the external jugular vein makes the vessels dilate, the patient feels worse, and the ear feels full. The left external jugular and small veins are very large, but the venous tumor previously noted below the ear is not so large. There is no tachycardia, no enlargement of the thyroid, and the blood pressure is low. There are loud souffle and bruit at the posterior end of the right digastric fossa. Auscultation shows a much louder souffle in the right ear than in the left. The souffle is loud on both sides, but much louder on the right. A pulsating course thrills like fine bubbles passing under the finger and can be felt below the angle of the jaw on the right side. The left tonsil has a scarcely perceptible pulsation. The patient says that speaking increases the tinnitus and that during the severe attacks of headache there is an increase of the venous distention of the neck and head, as well as an increase of the tinnitus and fulness of the head. She has what appears to be fainting attacks, which she describes as feeling like "black water" before the eyes. She says that the tinnitus seems to come from the right side, but is felt in the left ear. The dizziness, she says, by motion of the hand, is from right to left. She says that long ago in Russia she had an operation to remove something from the back of the throat. She says that the tying of the carotids gave relief for a short time only.

Eight five-grain tablets of thyroid gland increased all the painful symptoms of the headache and tinnitus to a very marked degree, till she tried to jump from the window. This, with the varying symptoms, sometimes better and sometimes worse, makes the case appear to be one of *exophthalmic goiter* and not arterio-venous aneurism.

FOR HEMORRHOIDS.

℞ **Morphinæ sulph., gr. ij.**
Ol. olivæ, ʒ ij.
Ungt. zinci oxidi, ℥ j.
Pulv. gallæ (nutgall), ʒ ij.

M. Sig. Cleanse the parts thoroughly and apply locally once or twice daily.

Or:

℞ **Acidi gallici, gr. xx.**
Ext. opii,
Ext. belladonnæ, aa gr. x.
Ungt. simp., ℥ j.

M. Sig. Apply locally to the painful parts.—*Ex.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, JULY, 1906.

THE TREATMENT OF PUERPERAL SEPSIS.

Until there is found some definite clinical method of distinguishing toxemic from bacteremic, and localized from generalized infection, no uniformity in the treatment of puerperal infection can be looked for. At present, each clinician must decide arbitrarily whether, in a given case, he is dealing with a toxemia, or a bacteremia, and the decision will depend largely upon his experience or his personal views. Some surgeons are inclined to regard any patient who exhibits high, irregular post-partum temperatures, as bacteremic; others, more conservative, (as Cragin, see this month's Progress in Surgery), consider every case toxemic until the contrary is proven. There is a limited number of cases of both kinds, in which the clinical data are sufficient and sufficiently characteristic to permit of a certain diagnosis—as for instance, cases in which pyrexia, due to retained membranes or placenta, is promptly relieved by emptying the uterus; or, on the other hand, those in which multiple septic foci are found at different sites, blood culture being positive. The great majority of cases, however, are on the border line, and even large statistical reviews are of little value, while the recognition of the actual condition is indeterminate.

It is unnecessary to consider such wildcat and ephemeral methods of treatment as the intravenous injection of formalin, and other fantastic efforts of enthusiasts. The main attention of the profession is centered upon the conservatists, on the one hand, who content themselves with supportive measures, gentle irrigation of the uterus with bland fluids, and incision of any pus foci which may develop, and upon the radicals, on the other hand, who perform hysterectomies, ligate or excise the large pelvic veins, etc., sometimes, it must be acknowledged, upon quite insufficient indication. These two camps brandish imposing statistics to confute each other but, until evidence is more positive, the unbiased onlooker will, in most instances, place the burden of proof upon the more radical element. The reason for this is, that operative interference will usually have to be based upon uncertain indications, that it is impossible to state whether the patient might not have recovered without radical operation, that the operative mortality is high, and that removal of the uterus in a woman during the childbearing period should not be lightly undertaken. The conservatives base their claims upon the fact that many patients recover, and recover completely, although they may appear to be profoundly toxemic or even bacteremic during some stage of their illness, and further, that those cases that come to autopsy show no localized infected area that could have been successfully removed.

It would, therefore, seem logical, at least for those practitioners who have no large series of cases upon which to base their own views and theories, to treat septic puerperal cases with the utmost conservatism—to build up the strength of the patient by judicious feeding, stimulation and hydrotherapeutic measures. Thus their efforts will aid nature in overcoming the infection, or in limiting the bacterial invasion within narrow, and often accessible confines. When a pus focus develops, it should be drained as in other surgical affections, but if the bacteria have once spread and show no inclination to form discrete foci, it would appear that non-intervention offers as good a prospect as, if not better than, the most "up-to-date" surgery. R. T. F.

SOME SURGICAL ASPECTS OF INDEPENDENCE DAY.

It is a long cry from burning words to burned fingers, and it is perhaps too much to ask American citizens to return at once to the celebration of Fourth of July by appropriate oratory and the quieter holiday pursuits. Yet if fireworks are essential to the display of patriotism, surely firecrackers and pistols are not essential to the display of fireworks.

That some few communities have sufficiently recognized the dangers of these instruments of noise and destruction to enforce laws against them, is re-

sponsible in a small measure, perhaps, for the decreasing mortality of Fourth of July tetanus. For that decrease, however, are chiefly responsible improvement in the management of tetanus cases and, especially, the more general recognition of the importance of the prophylactic treatment of pistol-shot and firecracker wounds.

Certain points are still moot concerning the pathology of tetanus, the advisability of amputation in certain cases, the best method of administering the antitoxin, etc., but there is no disagreement concerning the usefulness of antitoxin and the importance of treating, as though infected with tetanus, all blank cartridge wounds.

In this connection we cannot do better than quote from the excellent article by Thomas B. Cooley in the June number of *The Detroit Medical Journal:*

"Whatever conclusions one may arrive at regarding the value of methods of treatment in tetanus, there can be no two opinions regarding the necessity for and the general principles of prophylaxis. Testimony on these points is overwhelming and constantly accumulating. In fact, I should not think it necessary to treat the question here did I not know, both from reading and from experience, that not all physicians practice what has been so faithfully preached. For this I can see two reasons—neither valid as an excuse when tetanus develops. There is a certain natural reluctance to make a considerable surgical case of an apparently trivial wound, and to go to the expense of antitoxin. Added to this is the fact that tetanus being relatively a rare disease, physicians do not have it so constantly in mind as they should. It is not easy to say just when the neglect of prophylactic measures becomes malpractice, but in my opinion most of the cases where tetanus develops under medical care deserve to be classed in this category."

The entire article is well worth the careful reading. Unlike Luckett, to whose very practical contribution in this issue we would also refer our readers, Cooley objects to the use of phenol in disinfecting the wounds because the eschar it produces protects underlying tetanus bacilli from the air which inhibits their growth. (If the phenol is followed by alcohol, however, this objection is perhaps overcome.) Cooley also disagrees with Luckett in that he favors amputation in "very extensive or multiple wounds." He favors intravenous injections of the antitoxin, but inclines to accept the value of Rogers' combined method of injections, although, like Luckett, he sees limitations in the attempts at "nerve blocking." In the importance of frequent and large doses of antitoxin, and in the necessity of "keeping the patient alive" by proper feeding and intelligent nursing, these writers are in entire accord with each other and with those other men whose large experience with this disease is blazing the path for the practitioner to follow.

This Independence Day will no doubt afford an opportunity to study, on a more extensive scale, the value in tetanus convulsions, of spinal injections of magnesium sulphate, the nerve paralyzing property of which was recently announced by Meltzer. Experiences with this salt as an antispasmodic in tetanus have thus far been somewhat discordant, although, on the whole, encouraging.

MILITARY SURGERY, AND THE MEDICAL EDITORS, AT THE BOSTON MEETINGS.

Military surgery was amply represented at the Boston meetings, not only by reason of the delegates present, but, especially, by the exhibition of the workings of a field hospital set up near the new Harvard Medical School buildings. At the meeting of the American Medical Editors' Association papers were read by Majors Pilcher, Woodruff and Lynch; at the editors' banquet Surgeon-General Wyman and Major J. R. Kean delivered addresses; and Major James Evelyn Pilcher, editor of the *Journal of the Association of Military Surgeons of the United States,* was elected president of the Editors' Association for 1906-7.

The other officers are, First Vice-President, Frank P. Foster, M.D.; Second Vice-President, Charles F. Taylor, M.D.; Secretary and Treasurer, Joseph MacDonald, Jr. M.D. This Association has been growing rapidly in size and in activity. It consists now of one hundred and thirty-five members, representing ninety-two medical journals.

PUBLISHER'S ANNOUNCEMENT.

In this issue Dr. Martin Ware concludes his series of articles on Plaster of Paris and How to Use It, begun in December, 1905. The large number of requests for reprints of these articles and for back numbers of the Journal containing them, demonstrates that the series has been of more than ordinary interest to our readers. We are unable to supply copies of some of the back numbers of the Journal. Plaster of Paris and How to Use It, as also the preceding series of articles on Paraffin in Surgery, by Drs. Luckett and Horn, will, however, be reprinted and published in durable book form.

The success of these series has determined us to continue the publication, in serial form, of not too lengthy monographs on practical surgical subjects. Photographs are now being prepared to illustrate a series that will begin in the fall. It will be devoted to the exposition of an extremely important and highly practical subject, of interest to all physicians, that has never been dealt with before, either systematically or completely. Further announcement of this monograph will be made in due time.

Surgical Suggestions.

If the powder grains are not promptly removed in gunshot wounds of the exposed part, unsightly discolorations result.

The possible development of a duodenal ulcer in cases of extensive burns, must always be borne in mind.

After the extraction of a foreign body from the cornea, a drop of castor oil between the lids will ameliorate the pain.

A swelling or redness behind the scrotum, in cases of urethral stricture or developing after urethral instrumentation, usually means urinary extravasation, which requires prompt and active treatment.

If difficulty is experienced in reducing a paraphimosis because of swelling, before dividing the constriction apply a rubber bandage around the parts for a few minutes; this may relieve the swelling to such an extent that the paraphimosis can be easily reduced.

In severe falls or blows or fractures of the pelvis, catheterize the patient as soon after the injury as possible in order to discover a possible rupture of the bladder.

In cases of fracture of a rib, it is necessary to watch the patient carefully for a couple of days to note the onset of a possible lung complication. Localized pneumonitis sometimes occurs.

In fractures of the base of the skull, with bleeding from the ear, it is important to take especial pains to prevent ear infection.

In every case of injury to the nose, with or without fracture, it is well to examine the septum for displacement. If displaced it should be carefully restored, using a nasal plug, if necessary, to keep it in place.

When there is bleeding from the tongue, postoperative or otherwise, and one feels reasonably sure that the hemorrhage is arterial, it can, as a rule, be easily arrested by passing the forefinger down to the epiglottis and hyoid bone and drawing the base of the tongue upward toward the chin.

Fresh wounds about joints should not be probed to see whether the joint has been penetrated or not. This is an excellent way of infecting them.

In cut-throat wounds where the thyrohyoid membrane has been severed, it is necessary, in order to restore perfect phonation and deglutition, to suture this membrane accurately.

The greatest ultimate danger in cut-throat cases is the onset of a septic pneumonia. This may be obviated in a measure by closing up the pharyngeal wall, and by paying the strictest attention to asepsis.

Prolapsus ani is a frequent accompaniment of bladder stone in children.

Hemorrhage from the bowel in children is not infrequently caused by a polypus in the rectum.

In infants sudden, severe colic associated with diarrhea or the passage of small quantities of blood, should lead one strongly to suspect an intussusception.

Patients with varicose veins should be instructed that in case hemorrhage takes place, the best method of stopping it temporarily is to merely compress the bleeding point with the finger.

In removing a skin suture, pull up on one side and cut it as close to the skin as possible. This is in order to avoid drawing any of the exposed part of the suture through the wound and thus possibly infecting it.

It is a wise rule never to attempt taxis in cases of strangulated hernia. The only exception might possibly arise in a case seen within the first hour.

Examine the umbilicus and the inguinal and femoral canals in all cases of obscure intestinal obstruction. Small strangulated femoral herniæ often simulate very closely the feel and appearance of a gland, and in such cases one may be easily misled.

After operation for empyema, a cover of oiled silk or gutta-percha over the gauze dressing serves to prevent admission of air into the pleural cavity, while it will not interfere with the escape of air already in the chest. Indeed, a flap of rubber may be laid over the wound and fastened, with a little chloroform above. This allows pus to escape from beneath it and excludes the admission of air.

Book Reviews.

A Treatise on Surgery. In two volumes. By GEORGE R. FOWLER, M.D., Examiner in Surgery, Board of Medical Examiners of the Regents of the University of the State of New York; Emeritus Professor of Surgery in the New York Polyclinic, etc. Two imperial octavos of 725 pages each; 888 text illustrations; 4 colored plates. Philadelphia and London: W. B. SAUNDERS COMPANY, 1906. Per set: Cloth, $15.00 net; half morocco, $17.00 net.

The second volume of Fowler's treatise contains the main part of the regional surgery of the body. The vertebræ, the abdominal and pelvic regions, the female pelvic organs, the upper and lower extremities, are dealt with in the order named. Of greatest interest is the section dealing with the surgery of the abdomen, upon which subject Dr. Fowler entertained original ideas and theories. He gives a detailed description of the so-called (Fowler) "elevated head and trunk position," and the theoretical and practical considerations upon which this posture is based. Many original operations or modifications of various procedures are to be found in the book. Among them may be mentioned an intermuscular incision for appendicitis, an operation for prolapse of the rectum, a modification of the ligature method of hemorrhoid removal, a variation in colopexy, and a ventrosuspension of the uterus by means of the urachus. A great number of minor points and suggestions, born from the author's extensive surgical experience, will also be found. The section on the male pelvic organs is complete; especially so is that part dealing with prostatic surgery. As usual in a treatise on general surgery, female pelvic organs are considered with less thoroughness. The extremities, both upper and lower, receive careful attention, this applying especially to the matter of fractures, dislocations and operations.

The illustrations in the second volume are more satisfactory than those in Volume I. The pictures of abdominal operations are excellent, from both a technical and prove a most useful and valuable addition to the surgeon's and practitioner's library.

Heath's Manual of Minor Surgery and Bandaging: *For the Use of House Surgeons, Dressers and Junior Practitioners.* Thirteenth edition. Revised by BILTON POLLARD, F.R.C.S. Philadelphia: P. BLAKISTON'S SON AND CO., 1906. Price, $1.50.

That this work has passed through twelve previous editions seems sufficient testimony that it has much merit. We must confess, however, to the impression that it is not as sufficiently up to the times as it might be. The vast majority of surgeons have arrived at the conclusion that asepsis is far preferable to antisepsis. This work, however, still teaches the pronounced antiseptic methods of many years ago. Carbolic acid, five per cent., is the favorite solution employed for the hands, sponges, wet dressings, ets. It is even directed that the gauze and cotton be impregnated with various antiseptics. We believe that the preparation of the patient's skin, as described on page 18, by applying five per cent. carbolic acid solution for forty-eight hours previous to the operation, is regarded at present as both unnecessary and even detrimental. Throughout the book we note everywhere the use of the phrase, "with antiseptic precautions," or "the wound should be dressed with antiseptic gauze." These directions have long ago passed from the field of controversy and in an up-to-date book, therefore, they should be taken for granted. We have noted this practice incidentally in other English surgical publications. These are the main criticisms that we have to offer against this work, but there are a few other minor points where exception might perhaps be taken. For instance, it is bad practice to take the post-operative temperature by the mouth, as advised on page 395. We also do not approve of the practice of administering chloroform in the operation of removal of the tonsils, as advised on page 184, nor of the practice of applying belladonna to inflamed and suppurating areas in order to relieve pain. Among sins of omission, we fail to find any mention of the importance of change of position of the patient in the prevention of bed sores, in the paragraph devoted to that subject. We should also expect in a volume recommending the use of carbolic acid to such an extent, some mention of the danger of employing it on the fingers or toes. Aside from these faults, the book contains much useful information and is valuable for the purposes for which it was intended.

The illustrations and typography are excellent. On page 32, however, Elsburg should be Elsberg.

The Edinburgh Stereoscopic Atlas of Anatomy. Prepared under the Auspices of the Department of Anatomy of the University of Edinburgh by PROFESSOR J. R. CUNNINGHAM, M.D., D.S.C., LL.D., D.C.L., Edited by DAVID WATERSTON, M.A., M.D., F.R.C.S.E., F.R.S.E., Lecturer and Senior Demonstrator in Anatomy, University of Edinburgh. In five sections, of fifty stereographs each, in cloth cases; with hand stereoscope. SECTION I. THE THORAX AND CENTRAL NERVOUS SYSTEM. New York: IMPERIAL PUBLISHING CO., 1905, 1906. By subscription only. Price of atlas, complete, $50, net.

In the May issue, in connection with a critique of Section II (the abdominal and pelvic regions), we reviewed this atlas as a whole, pointing out its many advantages from both the artistic and didactic standpoints, and referred to some minor demerits of this system of photographed dissections.

Section I consists of fourteen stereoscopic photographs of dissections of the hardened brain, and thirty-six of the thorax; the thoracic representations are especially to be praised. Some of them show the heart, various sections of the heart, and the empty pericardium (with the openings in it for the great vessels) hardened in situ—demonstrating in the most striking manner the levels and relative positions of the heart valves, heart chambers, and coronary arteries, and, at the same time, the depth of these structures beneath the costal arch and their positions behind the various ribs. This has been accomplished by the method of double exposure, first with the sternum and costal cartilages in situ and then after their removal. The value of such views as these in the study of physical diagnosis, no less than in surgical anatomy and pure anatomy, is obvious. We question whether internist or anatomist could behold these pictures in the stereoscope without adding something to his information.

The views of the structures at the root of the neck, and of the mediastinal and apical surfaces of the lungs are also extremely instructive.

The views of the brain are not as numerous as they might have been, although, perhaps, they cover most of the dissections of which stereoscopic photographs might possess an advantage over simple photographs.

The International Medical Annual. *A Year Book of Treatment and Practitioner's Index.* Twenty-fourth Year. Octavo; 558 pages; 70 illustrations and 32 plates. New York: E. B. TREAT AND COMPANY, 1906. Cloth, $3.00.

Medical literature has grown so voluminous that quarterly and annual summaries and abstracts have come to possess a recognized value. To those physicians not situated within easy reach of a large medical library they are well-nigh indispensible.

Among these summaries the *International Medical Annual* has earned an enviable position. In the quarter century of its existence it has steadily increased in popularity. A perusal of this, the twenty-fourth issue, gives evidence of care and thoroughness in compilation and in editing. It is freely illustrated and supplied with several excellent plates, some of them for stereoscopic study. Indeed, the general excellence of the book deserves commendation in view of the fact that much of it was destroyed by fire while in type, and fresh manuscript had to be prepared. A synoptical index of the annuals of 1899-1904 which was also being set in type, was melted in the fire, and is promised by the publishers as a separate issue.

Progress in Surgery.

A Résumé of Recent Literature.

The Use of Magnesium Sulphate in the Production of Anesthesia and in the Treatment of Tetanus. J. A. BLAKE, New York. *Surgery, Gynecology and Obstetrics,* May, 1906.

Blake used a 25% magnesium sulphate solution for intraspinal injection in two cases, to produce anesthesia. In the first, a woman, an operation for chronic appendicitis was performed with the aid of a few cubic centimeters of chloroform, the anesthesia, however, deepening after the operation. For nearly two days the patient showed grave symptoms, such as persistent paralysis, delirium and coma. The second case was a man to be operated upon for fistula in ano. In this instance all anesthetic action was wanting and a large quantity of chloroform was required. Blake concludes that for the purpose of anesthesia the method is unreliable and may prove dangerous.

In the case of a boy suffering from severe traumatic tetanus in which the symptoms developed after a short incubation period of seven days, the convulsions and opisthotonos were controlled by five successive intraspinal injections, the paralyzing effect lasting from 33 minutes to a few hours. The patient recovered. In these cases the author considers magnesium sulphate of value as the patient's life can be prolonged until the organism has time to elaborate protective antibodies.

The Treatment of Tetanus by Intraspinal Injections of Magnesium Sulphate for the Control of the Convulsions. T. LOGAN, New Orleans. *Journal of the American Medical Association,* May 19, 1906.

The author tried these injections, first recommended by Meltzer, in two cases of tetanus, both patients dying. In the first, two injections were used, each being followed in from 35 to 40 minutes by complete relaxation, which lasted in the first instance for more than twelve hours. The second case was of the fulminating type and no relief was afforded.

The quantity injected into the first patient was 1 ccm. of 25% magnesium sulphate solution for each 20 pounds of body weight; in the second case 1 ccm. for each 25 pounds of weight were used. Logan believes that if the dosage had been increased the convulsions might have been controlled. Only one untoward effect was noted, and that was the appearance of a marked bronchorrhea and cyanosis when muscular relaxation occurred. To prevent this accident the patient should be placed in the semirecumbent position as soon as muscular relaxation begins to appear, and atropin should be exhibited coincidently.

The Methods and Indications for the Use of Spinal Anesthesia. ARTHUR W. ELTING, Albany. *Albany Medical Annals,* May, 1905.

After Bier's first publication, spinal anesthesia suffered the same fate as other innovations in the indiscriminate use to which it was subjected. This led to its quick condemnation by many surgeons, who had not given sufficient application to the proper methods and indications. A reaction has now set in, due partly to the natural course of events, and partly to the modifications of the original technic. The two main disadvantages that were early noted, were first, the toxicity of the cocain, and secondly, the absence or incompleteness of anesthesia in an appreciable number of cases. In order to obviate the first, Bier has introduced stovain, which is almost as efficient as cocain and is practically non-toxic. In order to further reduce the toxicity to a minimum, he advocates the combination with adrenalin. The absence or incompleteness of anethesia may be due to many causes. Unilateral anesthesia, for instance, may be due to the fact that the needle is not in the median line, or incomplete anesthesia may be due to the fact that the point of the needle is not free within the spinal canal. Elting advises, therefore, that the spinal fluid shall flow freely before any solution is injected. We must also remember that the sensory fibers of the cauda equina are situated posteriorly, while the motor fibers are more anterior. The needle, therefore, should not be introduced too deeply; a deep introduction may also cause a hematoma and this may be another reason why the anesthesia is incomplete. The solution should also be isotonic; for this Elting advises the use of normal salt solution as a diluent. Another cause of failure, which it may be unnecessary to mention, is the use of old solutions, or solutions that have been rendered inert by excessive boiling. The indications for the use of cocain, are, according to the author, universal, except in children below 10 or 15 years of age. In the old, or in cases of circulatory or pulmonary disturbance it is especially indicated. It has proven itself of great value in cases of crushing injuries to the extremities; the amputation can be performed without any increase in shock. The author reports 30 cases in which spinal anesthesia was employed, with highly satisfactory results.

The Local Anesthetic Action of Stovain. DAN MCKENZIE, London. *British Medical Journal,* May 12, 1906.

McKenzie reports the results of observations of 60 cases in which he used stovain in throat and nose work. He finds that it is fully the equal of cocain in its local action and is not nearly as toxic. Like cocain, it also induces ischemia of erectile mucous tissues. The only disagreeable feature which he discovered is the superficial sloughing which ensues if stovain is left in contact with the tissues for too long a time. He therefore advises that it never should be left on for more than 15 minutes. He finds that a 10 per cent. solution answers all purposes.

Disturbances of Growth Following Short Exposure to the Roentgen Ray (*Ueber Wachstumsstörungen nach kurzdauernden Röntgenbestrahlungen*). K. FÖRSTERLING, Hannover. *Zentralblatt für Chirurgie,* No. 19, 1906.

The author exposed the lower extremity of a young dog (one of a litter of five) to the x-rays for 10 or 12 minutes, at a focal length of 20 cm., one exposure being given. After one week the extremity became bald, but the hair grew again in the course of a month. The dog was killed 7½ months after the experiment. The measurements of the different bones of the leg showed them shorter by from 2-4 cm. than those of the unexposed side. In a litter of rabbits four were exposed to the x-rays for 5, 10, 15 and 18 minutes; again only one exposure was resorted to. All of the exposed animals were of less weight on the 50th day than the control, and a similar difference was noted on the 100th day.

Försterling concludes that exposure of infants and children to the rays is not a matter of indifference, but should be guarded against and reserved only for very serious cases, every precaution being taken to expose as little of the body as possible.

Invisible Surgery. J. L. AYMARD, London. *Lancet,* May 12, 1906.

By invisible surgery, Aymard refers to the healing of incisions without scars. The author claims to have obtained this by his method. Briefly, it consists in the following steps: the skin should not be shaved, the hairs being extracted only in the line of the incision, the others being kept away with collodion. The skin is prepared merely with soap and hot water without any antiseptics, and is covered with a dry warm pad. The main "trick" is to make the incision with an exceedingly sharp hollow-ground scalpel obliquely through the skin; the incision to the fascia must be made with one stroke. The flaps of skin must be handled very gently and without any instrument. The author as a rule picks them up in pieces of dry warm gauze, and keeps them softly retracted from the field of operation. When the operation is completed the two flaps are adjusted nicely, best under a magnifying glass, and are kept in position preferably with a glass

dressing, or by collodion. If sutures are used, they must be exceedingly fine and inserted through the apex of the lower and the base of the upper slant. The pressure must be very slight and there must be no retraction. After healing, massage of the wound is to be practiced.

Surgical Scarlet Fever (Etiology and Symptomatology of Scarlet Fever). JAMES L. FLEMING, Chicago. *Chicago Medical Recorder,* May 15, 1906.

That there is a special form of scarlet fever beginning in operative or traumatic wounds is maintained by many and denied by others. Hamilton after a careful study of 174 reported cases, says that the evidence in many cases is meager, and that a careful analysis would prove them to be septic rather than scarlatinal infections. Of the undoubted cases there is no proof that the disease was in any way due to the coincident wound.

With regard to the occurrence of scarlatina in the puerperal period, practically the same statement may be made. Either the so-called scarlatinal infections are septic, or the presence of scarlatina at such a time is a coincidence and is in no way due to the puerperal wound.

A Simplification of the Usual Technic of Skin Grafting. J. E. CANNADAY, Paint Creek, W. Va. *Journal of the American Medical Association,* June 2, 1906.

Cannaday uses bi-daily dressings of gauze wet with chloral hydrate solution (2 grains to the ounce), and protected with oiled silk, as a preliminary for obtaining a clean granulating surface. When ready to graft he freshens the granulated surface with a nail brush, which he prefers to the curette because less bleeding is caused than by the latter. He uses Thiersch grafts, taken by preference from the patient. The grafts are shaved by a sawing motion, one-half the thickness of the skin and one-half inch by one and a half inches in size. As soon as cut they are turned over the left index finger, skin side next the finger, and carried directly to the denuded site and pressed down on its surface, the edges being smoothed off with a probe. The process is repeated till the area is covered. He believes this direct transplantation better than the intervention of any saline or other solution, which makes the operation more difficult and less certain. He covers the grafted site with thin dental rubber dam, criss-crossed for drainage if the area is large. Over this he places a small gauze pad, anchored with zinc oxid adhesive plaster, and externally a cotton, gauze and bandage dressing. Some method of immobilization may be desirable, and if the grafting is done on a limb he keeps it on the level of the body, or a little elevated. Slight pressure will keep the grafts in place and prevent serum accumulation or bleeding; too much pressure kills the grafts. He has now used this method in 23 cases, chiefly burns and lacerated wounds, without a single complete failure.

Further Remarks on the Abduction Treatment of Fracture of the Neck of the Femur. ROYAL WHITMAN, New York. *Therapeutic Gazette,* May 15, 1906.

First of all, Whitman combats many of the generally accepted and text-book views concerning fractures of the neck of the femur, e. g., that they occur almost entirely in old age; that intracapsular fractures do not heal; that no attempt should be made to remedy the deformity in cases of impacted fracture; that the patients are too old to treat and finally that the fracture is always caused by great degrees of violence. Each of these statements is denied separately by Whitman, especially the implication that no good results can be expected in this form of fracture. Whitman has studied the mechanism and anatomy of these fractures carefully and has found that in the position of extreme abduction at the hip, the two fragments will, as a rule, become nicely approximated, and if fixed in this position, the union and ultimate functional result will, in the large percentage of cases, be good. If the fracture is impacted and is accompanied by deformity, Whitman recommends a similar procedure. In detail, the method is somewhat as follows: the patient having been anesthetized, the sound limb is placed in the position of extreme abduction in order to fix the pelvis and to serve as a guide. The assistant holding the injured limb, then slowly, under traction, abducts it, the surgeon meanwhile supporting the joint with his hands and pressing gently downward on the trochanter. When approximately the normal limit has been reached, a closely fitting long plaster spica is applied. In impacted cases the limb is flexed somewhat and rotated inward to disengage folds of capsule that may have fallen between the fragments; manual traction with counter-traction is then made until the limbs are shown by measurement to be of equal length. The assistant then abducts the extended limb on the pelvis, the operator supporting the joint and pressing the thigh upward from beneath, the aim being to force the fragments forward against the tense anterior wall of the capsule. The plaster of Paris spica is then applied.

The Operative Treatment of Fractures of the Patella. JOHN H. GIBBON, Philadelphia. *New York Medical Journal,* May 26, 1906.

Gibbon speaks enthusiastically of the operative method of treating fractures of the patella. He does not believe it is necessary to wait a couple of days after the fracture before operating, but that just as good results are obtained if it be done as soon after the injury as possible. Gibbon's method of operating is that ordinarily practiced. He uses strong chromic gut to suture the fractured ends together. Having recently obtained perfect results by merely suturing the fibrous tissue to bring the fragments together, Gibbon believes he will discard the method whereby the fragments are drilled for the insertion of sutures. He emphasizes the necessity of always suturing the torn lateral ligaments at the completion of the operation. Formerly the author employed drainage of the skin, but at present he believes this is unnecessary. The limb should be elevated after the operation, to prevent the quadriceps from acting. At the end of three weeks massage should be begun, in the fourth week passive flexion, and at the end of six weeks no fixation whatever is necessary. The functional result is perfect at the end of three months.

On Stiff and Painful Shoulders. *The Anatomy of the Subdeltoid or Subacromial Bursa and Its Clinical Importance. Subdeltoid Bursitis.* E. A. CODMAN, Boston. *Boston Medical and Surgical Journal,* May 31, 1906.

Everybody who has had any dispensary experience will recall cases of obscure shoulder pains which baffle diagnosis and which respond but indifferently to treatment. These cases usually pass under the diagnosis of rheumatism, periarthritis, fibrous ankylosis, neuritis, deltoid paralysis, neurasthenia, etc. The author shows that the great majority of these cases are due to disease in the subdeltoid bursa. This bursa lies between the deltoid and supraspinatus muscles and is absolutely essential to the proper performance of abduction and rotation. Like all bursæ, it is subject to acute inflammation with exudation, which continuing, results in adhesions between the two surfaces. The most common causes are trauma, pressure and ill-use or over-use. In the great majority of cases these adhesions are due to improper treatment in the acute stage. This is brought about by the fact that the patient finds most comfort in placing the arm in the sling position, and the physician naturally advises him to keep it there. Codman shows that this position tends to keep the opposing surfaces together and thus promote the formation of adhesions. The author describes four types of the disease. The first is the acute or recent type and is characterized by muscle spasm. Active and passive motions are painful, but the motions are not absolutely limited. There is a tender area on the anterior aspect of the shoulder and sometimes a swelling. The pain is generally worse at night and is referred to the course of the external or internal cutaneous nerves. The second type is due to adhesions. There is usually pain; in some cases, however, the only complaint is a limitation of motion. The essential characteristic of the third type is pain in certain motions, but the ability to carry out the full arc motion of the joint persists. The fourth type includes the traumatic cases of rupture of the supra-spina-

tus tendon or the facet of bone to which it is attached. These cases properly belong to fractures. The best treatment in acute cases is the application of a Monks splint. This splint holds the arm at right angles to the body in a position of abduction and internal rotation. In cases where adhesions have already formed, these should be broken up under anesthesia, and the arm placed in a modification of the Monks splint, whereby the humerus is held in the position of abduction and external rotation. For a description and illustration of this splint the reader is referred to the original article. In five cases the author has operated by cutting down upon the bursa and forcibly liberating the adhesions. In the post-operative treatment, the use of the splint is important.

Clincal Remarks on the Early Recognition of Cancer of the Breast. G. L. CHEATLE, London. *British Medical Journal*, May 26, 1906.

According to Cheatle, the three most important signs of breast cancer in the early stages are: 1. The presence of a single tumor. (If multiple, the case is probably not cancer.) 2. Retraction of the skin over the tumor. 3. Flattening of part or whole of the curve of the breast over the tumor. If these three symptoms are associated the author believes the case should be regarded as cancer. Enlarged glands in the axilla are already evidences of an advanced case, but the author advises that in all cases both axillæ should be examined, and if the glands are enlarged on both sides, it would be a point against the diagnosis of cancer. Retraction of the nipple is also a late sign, except when the tumor lies just beneath, but hemorrhage from the nipple on compression of the breast is highly suggestive of malignancy. In doubtful cases, a microscopic examination of an excised piece of the tumor should never be omitted. In order to prevent dissemination, the exploratory operation should be a wide one, and should include the skin immediately above the tumor and the fascia beneath.

The Office Treatment of Anal Fissure. S. G. GANT, New York. *Medical Record*, April 28, 1906.

Gant divides anal fissures into two varieties, the superficial, and the deep or true fissure. A recent fissure unaccompanied by sphincteralgia may be cured without resorting to surgical measures. The treatment consists first, in the administration of a soft diet, and laxatives; the fissure should be kept clean, after each movement, best with a piece of cotton on the end of a toothpick dipped in some antiseptic solution. After it has been thoroughly cleansed, topical applications of 10% silver nitrate, 10% ichthyol and glycerin 15%, on the end of a cotton-wound toothpick should be made, or citrate of silver or calomel ointment may be applied twice daily. As a general rule, a chronic fissure or one accompanied by sphincteralgia should be treated surgically. If the patient refuses, topical applications may be made upon gauze which is allowed to remain in situ until defecation occurs. The author uses 20% nitrate of silver, 50% ichthyol or full strength of balsam of Peru. As regards surgical treatment, Gant advises against divulsion or excision of the fissure; he prefers simple division of the sphincter which can easily be done at the office and without general anesthesia, as follows:

"*Technic of the Gant Operation.*—The patient previously prepared, is placed upon a low table in the lithotomy position, or upon his left side with his legs flexed upon the abdomen. The buttocks are held apart by an assistant; the operator then seizes a fold of skin in the median line one inch from and posterior to the anal margin and compresses it between the thumb and forefinger to lessen the pain caused by the puncture. A syringe holding not less than one ounce, filled with sterile water or fitted with a Gant curved extension piece and sharp needle, is filled with sterile water or, preferably, one-eigth of one per cent. eucain solution. The needle is introduced between the layers of skin and a sufficient amount of the solution is injected to produce a whitish swelling, which indicates anesthesia at that point. The needle is then inserted further and further until anemia of the skin from the point of entrance up to the anal margin has been produced. It is then directed inward and a sufficient amount of the solution deposited to form a firm, round, whitish tumor about the size of a pigeon egg. The external sphincter and posterior rectal wall for a distance of one and a half inches are now injected and anesthetized in a similar manner, when the operation can be proceeded with painlessly. In producing local anesthesia by this method, it is not necessary to waste time in endeavoring to locate any particular nerve branches, because absolute anesthesia is immediately obtained where a sufficient amount of the solution has been deposited to produce edema, or anemia of the part to be incised. The only instrument used in this operation is a strong pair of scissors having fairly long blades, one of which is sharp and the other probe pointed. The sharp pointed blade is pushed through the skin in the median line, one inch posterior to the anus; at the same time the probe pointed blade is inserted through the anal orifice; the scissors are now pushed upwards for a distance varying from one and a half to two inches, when with one bold cut all the tissues between the blades are severed, making a triangular wound in the posterior median line, two inches in length and one-half inch in depth, which includes the skin, subcutaneous structures, sphincter muscle, posterior bowel wall and adjacent tissues behind it. Skin tags or piles are now excised and the wound is lightly packed to prevent bleeding; it is then covered by a gauze pad kept in place by means of a well adjusted T-binder. The post-operative treatment following this procedure is most simple and consists in cleansing the wound daily after each stool and inserting a piece of gauze loosely in the cut as a drain and to keep the edges apart. After the first week the gauze is moistened with ichthyol or balsam of Peru to stimulate and increase the healing process. These patients are not confined to their rooms, they are permitted to eat whatever they choose and are advised to secure at least one semisolid action daily in order that the feces may not become hardened and injure the wound when expelled."

On the Merits of the Bottini Operation (*Zur Würdigung der Bottinischen Operation*). J. COHN, Berlin. *Berliner Klinische Wochenschrift*, April 16, 1900.

Cohn believes that the Bottini operation has not as yet entirely lost its place in favor of prostatectomy, and that in special cases it is the operation of choice. These are the cases of debilitated old men where a general anesthetic and a protracted convalescence are not desired. The author emphasizes the necessity of preliminary cystoscopy in order to determine the nature and situation of the obstruction; this, with the finger in the rectum, affords us a guide as to where the incision shall be made and its length. Two per cent. eucain anesthesia is employed, and the bladder is filled with boracic acid solution. A catheter should be left in situ for 4 or 5 days after the operation. In 150 cases there were but two deaths, and in the great majority the operation was attended by relief. The author admits recurrences in many cases, but holds that even if the Bottini operation affords only freedom from symptoms for a couple of years, the operation possesses some merit.

On Primary Caries of the Mastoid Process as a Cause of Mastoid Abscess in Young Children. L. P. GAMGEE, Birmingham. *Lancet*, May 5, 1906.

The author arrives at the following conclusions: 1. In young children a form of mastoid abscess not uncommonly occurs (in 10 out of 61 cases) in which there is no history of otorrhea, and in which the membrana tympani appears to be normal. 2. In these cases the abscess is of slow and painless formation, the patient's temperature not being raised and the ear not being displaced. 3. In these cases the abscess is due to primary caries of the mastoid, the patch of caries occurring somewhere along the line of the masto-squamosal suture, this being in a young child the softest and most vascular portion of the bone. 4. If the patch of caries forms in the upper part of the masto-squamosal line and if perforation of the caries occurs in the middle or lower part of the masto-squamosal line, the antrum is quickly opened up and then the caries spreads rapidly through the mastoid.

Tuberculosis as it Affects the Eye. WILLIAM A. WILDER, *Chicago Medical Recorder*, May 15, 1906.

Tuberculosis of the eye, as studied statistically has been considered comparatively rare. But with advancing knowledge and improved means of diagnosis the number of cases recognized as tuberculosis will probably increase.

There is noticeably greater frequency of infection of the eye through that form of skin tuberculosis known as lupus, which may affect the eyelids, either primarily or by extension from the skin of the face. According to different observers primary lupus of the eye occurs in from 3 per cent. to 5 per cent. of lupus cases, while secondarily the eye becomes affected in from 25 per cent. to 40 per cent. or more of such cases.

This is the form of tuberculosis that most frequently affects the eyelids, occurring in well known characteristic small brownish nodules of soft consistence that may break down and form ulcers or that may be absorbed and replaced by cicatricial tissue. In this manner the eyelid may be destroyed, and the conjunctiva and even the cornea invaded; or frightful deformities result from the ectropion, and shrinking of he conjunctiva; or the eyeball itself may be lost.

The theory that chalazion is of tubercular origin is founded on the histological appearance of strucutre resembling tubercle with giant cells, but this is by no means conclusive. It can probably be safely concluded that chalazion is not of tuberculous nature. But the tarsus of the lids may became involved by an extension of the disease from the palpebral conjunctiva, and in such an event might possibly show a thickening that would simulate chalazion in appearance.

Tuberculosis of the conjunctiva is a rare disease, and when it occurs is usually primary.

The disease, usually unilateral and affecting young persons of from 10 to 30 years, is of several types. It appears as small tubercles somewhat resembling enlarged trachoma follicles, miliary or larger ulcers, proliferations of the conjunctiva in tumor or polyp-like masses and finally as lupus. These different forms may pass from one in to the other. The tubercles may break down to form the small ulcers; these may coalesce and enlarge, and around them may grow up the proliferations that form the polyp-like masses. The palpebral rather than the ocular conjunctiva is affected; the latter may be involved by extension.

The nodules vary in size and the ulcers are ragged, with dirty looking floor. The lid is usually thickened, probably from invasion of the tarsus. There is not much pain, and the secretion is rather scanty. In the course of the disease the cornea may be attacked, ulceration may occur, and an extension of infection may lead to panophthalmitis and loss of the eye.

The preauricular glands and even the cervical and submaxillary glands may be enlarged.

The differential diagnosis must consider syphilitic ulceration, trachoma and epithelioma. Histological and bacteriological examination may show clearly the character of the case, or if it is doubtful, injection of tuberculin, or even inoculation may establish the diagnosis.

The prognosis in primary cases is not so grave if the character of the disease is promptly recognized and proper treatment instituted. Severe destruction of the conjunctiva may occur, however, and general infection may develop from such a focus.

Primary tuberculosis of the cornea is even more rare than that of the conjunctiva, and when it occurs is probably dependent upon direct infection through an abrasion. The reason for the infrequency of this infection is probably to be found in the fact that foreign particles do not easily remain on the smooth surface of the cornea, but are swept off by the tears and the motion of the lids.

Tuberculosis of the anterior part of the uveal tract, namely, the cilary body and the iris, is somewhat more frequent than other forms, although by no means so common as one might expect in view of the vascularity of this part.

There is strong presumptive evidence that many diseases of the cornea, iris and ciliary body may be of tuberculous origin in that they are excited by the toxins of the bacilli, although no typical gross lesions develop. Whether in such cases the use of tuberculin injections would have the same diagnostic value as in those in which the lesion is distinctly defined remains still for demonstration. That the use of this measure for diagnostic purposes is safe and in a large degree reliable is shown by numerous observations and reports. Tuberculin as a therapeutic agent in tuberculosis of the eye has been followed by such encouraging results that ons is constrained to believe that in it we have a valuable means for the cure of a disease that in most cases proves so disastrous to the eye.

Calculus of the Submaxillary Gland (*Un Cas de Calcul de la Glande Sous-Maxillaire*). G. ALEXANDRE, Paris. *Revue de Chirurgie*, May, 1906.

The patient was 50 years of age. For the last 12 or 13 years she had noted a painless swelling beneath and to the inner side of the lower jaw. The tumefaction varied in size, increasing as a rule after eating. For the last six months pain became more and more annoying. The entire submaxillary gland of the left side was removed through a small incision parallel to and beneath the ramus of the jaw. Only upon section of the gland, was the presence of a calculus, the size of a pea, discovered. The stone was composed of calcium phosphate and carbonate with organic matter. It contained a pure culture of leptothrix (which is supposed to produce the tartar on the teeth). The gland itself was free from microorganisms and showed only chronic inflammatory changes. The diagnosis of stones in the duct is easy, as pus is seen to exude from the duct opening, or a probe will touch the hard, rough foreign body. Intraglandular stones, however, are harder to recognize and require the removal of the entire gland, as in this case.

The Etiology of the Punctiform Hemorrhages Found in the Mucous Membrane of Appendices Removed During the Interval (*Zur Aetiologie der punktförmigen Blutanstritte in der Schleimhaut à froid extirpierter Wurmfortsätze*). C. BAYER, Prague. *Zentralblatt für Chirurgie*, No. 17, 1906.

The author explains the punctiform hemorrhages found in an otherwise intact mucous membrane of an "interval appendix," by the fact that the routine ligation of the mesenteriolum ties off the veins, but not the artery of the appendix. This is due to the fact that the artery hugs the appendix wall very closely and is embraced in the ligature which is used to tie off the organ. Consequently during a small interval of time the artery keeps on pumping blood, which is no longer carried away, and the minute hemorrhages, so frequently noted and so variously interpreted, result.

Improved Method of Suturing in Appendicitis. J. E. SUMMERS, Omaha. *Journal of the American Medical Association*, May 19, 1906.

By this method the wound is sutured 1rom peritoneum to skin, inclusive, by a one-string continuous stitch. Commencing at the inner angle, the peritoneum is closed by a simple continuous or button-hole stitch. When the outer angle is reached, the needle (full curved, round, spear pointed) is passed from below upward through the transversalis and internal oblique muscles, the needle emerging one inch outside of and above the outer angle of the separation in these muscles. This manipulation pulls the closed and puckered wound in the peritoneum above and somewhat outside of the line of the cleft in the muscles. These muscles are closed from without inward by a few deep continuous stiches, including all muscle. If the deep continuous stitch through the muscles has sufficed, the needle is passed from the inner angle of this closure superficially through the internal oblique muscle downward, and brought out at the lower angle of the wound in the fascia of the external oblique muscle. This fascia is then closed, either by a simple continuous stitch from below upward, or else the fascia may be made to overlap, and in this way give firmer support. Summers, however, thinks overlapping of the fascia unnecessary. He closes the skin with either a compound button-hole stitch or a subcuticular stitch. The whole procedure from the commencement of the operation to the closure of the wound takes from eight to twenty minutes, according to the difficulties found within

the abdomen and the thickness of the abdominal wall. After fixing on this technic as the most appropriate for the purpose, he selected 61 cases as suitable, and except 5 patients who were detained several days because of complications independent of the operation, as bronchitis, diarrhea, etc., all were discharged on the sixth or seventh day following operation, many being at home, perhaps from fifty to one hundred and fifty or more miles away, one week from the day they left home. In cases of several farmers, he has known of their being at work on the farm on the seventh day.

[In this connection we would refer to the article by S. C. Bede in AMERICAN JOURNAL OF SURGERY, May issue.]

Some Considerations in the Treatment of Purulent Appendicitis. C. H. PECK, New York. *Surgery, Gynecology and Obstetrics,* May, 1906.

The author reports a series of 36 cases of acute appendicitis of a severe type, stating his technic and results. He operates at any stage of the disease, using the McBurney intermuscular incision, unless a median site or low pelvic localization makes the Kammerer incision preferable. Small incisons lessen trauma, shock and expenditure of time [?], and reduce the danger of post-operative obstruction and hernia. During the manipulation he does not wall off with gauze pads except when a well localized abscess is present, as he considers the effect on the peritoneum of rubbing, etc., markedly detrimental. Ablation of the appendix is done as usual. Abscess cavities are swabbed with peroxid of hydrogen and drainage is limited to abscess cavities or to the region of the stump, when clean inversion is not practicable and necrotic material must necessarily be left behind. No attempt to drain the pelvis or the general peritoneal cavity is ever made. Where the infection is diffuse irrigation of the general abdominal cavity with the Blake double current tube is done, without evisceration. The after-treatment is simple. The bowels are moved after 48 hours, the drain removed after a like interval, and not replaced unless large uncovered areas have to be guarded. The drainage tracts are not irrigated, even if the discharge is abundant. Only one case of the series died. In this instance, the appendix was adherent to the lower surface of the liver and during the manipulation the cecum was injured. Although the gut was sutured, a fecal fistula and fatal peritonitis developed. In one case a mesenteric abscess appeared after the patient had left the hospital; it was successfully drained. One case of preoperative intestinal obstruction was met with and recovered. In another case of long duration, spontaneous evacuation into the vagina was noted and on operation extreme matting together of the intestines was found.

An Aid in the Performance of Gastroenterostomy and Enteroenterostomy *(Zur Technik der Gastroenterostomie und Enteroenterostomie).* E. JOSEPH, Bonn. *Zentralblatt für Chirurgie,* No. 20, May 19, 1906.

Bier performs intestinal anastomosis by means of a single layer of Lembert sutures, opening the gut with either the knife or the thermocautery. The author has devised an instrument which permits of performing the operation with little assistance and with lessened danger of subsequent hemorrhage or immediate soiling of the peritoneum. The device is a strong clamp, or rather angiotribe, which is inserted through a small opening in the gut or gut and stomach lumina. Each blade is put within the lumen of the two intestinal loops to be united, after the posterior peritoneal suture has been inserted, and the instrument is then closed. This not only keeps the surfaces in close contact, but also crushes all the layers except the serosa. The suture is now completed until the insertion points of the instrument are reached. Now a small movable blade concealed in a groove of the branches is moved, forward and backward, thus completing the communication. The clamp is now withdrawn and the suture finished. Usually no leakage can occur along the clamp; should such danger threaten, the handles of the instrument are held vertically upward, which completely averts this complication. The device has proven very useful.

Puerperal Eclampsia. *Statistics of Columbia Hospital.* J. F. MORAN, Washington, D. C. *American Journal of Obstetrics,* May, 1906.

Among 2,035 confinements there were 28 cases of eclampsia, or one to each 72 confinements. Six of these 21 were primiparæ, 5 multiparæ and 2 not given. The mortality was 7 mothers, 7 infants; and 7 infants stillborn. Most of the cases developed ante-partum, and the convulsions then ceased after delivery, except in three. The author goes into the various prodromal and other symptoms in some detail. He regards the urinary findings as deceptive. The prognosis is always grave as about one-fourth of all cases die. Rise of temperature, especially if continued, is a grave symptom. Immediate causes of death are most often pulmonary edema, pneumonia, cerebral hemorrhage and nephritis. The various theories as to the cause of eclampsia are discussed. Particular importance should be attached to prophylactic treatment in the threatening or prodromal stage. In the attack proper Moran favors administration of drastics, bowel irrigation if the blood pressure is not very high, and the hot air bath. Chloroform given during the convulsion only serves to increase the lack of oxygenation. Morphin and chloral are valuable. Veratum viride and nitroglycerin are also of use, while venesection finds its application in some cases.

Some Clinical Observations on Thirty-seven Cases of Eclampsia. G. H. RYDER, New York. *American Journal of Obsterics,* May, 1906.

The clinical histories of all the patients are reported in some detail. Thirteen deaths occurred, a mortality of 35%. It was noted that during certain periods almost all cases recovered, during others all died, although the treatment was the same. It was most fatal in the colder months. When the disease appeared before the 7th month the mortality was more than twice as high as when after this period. The severest cases were those of the hemorrhagic type—vomiting of blood, blood in stools, and petechiæ over the body—of 11 such cases, 9 died (82% mortality). The mildest cases were those that took place post-partum. The fatalities were about twice as high in cases in which delivery was delayed for more than twelve hours after the convulsions first appeared; and the same applied to cases in which the os was rigid and failed to admit two fingers. The highest mortality followed the more radical and extensive interference. Of four cases of vaginal Cesarian section, 3 died, or 75% mortality; after accouchement forcé it was 39%; after forceps, 20%, and the same for spontaneous deliveries. Premonitary symptoms appeared in 29 of all the cases, but in most cases there was no one to heed the warning. Of the children 50% were saved.

Prophylactic treatment is most important. To prevent or abort the attack the usual sedative measures were employed—morphin, chloral, chloroform. Nitroglycerin and veratum were used in preference to venesection. Rapid emptying of the uterus is essential, yet too violent measures must be avoided. For stimulating excretions calomel and salts, colon irrigations and hot packs were used. Venesection and infusion were also used in some cases. Of stimulants, caffein sodium salicylate was given, also strychnin. The effects of treatment were too variable to be of any value when tabulated.

The Etiology of Puerperal Sepsis. J. D. VOORHEES, New York. *American Journal of Obstetrics,* June, 1906.

The author rapidly reviews the introduction of antiseptic and aseptic methods. He then mentions the commoner forms of bacteria causing infection—the streptococcus, staphylococcus, gonococcus, bacterium coli and bacillus diphtheriæ, the pneumococcus, bacillus aerogenes capsulatus and the anaerobic saprophytes. At the Sloane Maternity Hospital the actual mortality, due to infections acquired in the hospital is 0.1% in 13,000 cases, but the morbidity is from 10 to 15%, if a rise of temperature to 100.6° is regarded as our criterion. Conditions favoring the growth of

pathogenic organisms are a dry labor, long protracted labor, or any instrumental delivery. Introduction of bags in the cervix, vaginal examinations, etc., predispose, as do retained membranes, placenta, clots, etc. Tears of any part of the genital tract afford an easy portal of entry. Large hemorrhages, primary anemia, constitutional diseases and toxemia lower the resistance to invasion. Almost all cases of puerperal infection originate from without, although in some women autoinfection cannot be excluded, as the vagina may and sometimes does contain pathogenic germs. Occasionally abscesses elsewhere, as in the ovary, breast, etc., cause autoinfection by propagation, by contiguity, or through the blood current.

The Treatment of Puerperal Infection. E. B. CRAGIN, New York. *American Journal of Obstetrics,* June, 1906.

The prophylactic treatment is most important. Antepartum vaginal douches are harmful in a normal case. Only where gonorrheal infection, or a purulent sinus exists, are 1-5000 bichlorid douches of value. The proper preparation of the vulva is essential—shaving, cleaning with soap and water, alcohol, sublimate solution and lysol, should be regularly employed, and should include the thighs and anal region. Sterile gloves worn by the obstetrician, after careful disinfection of the hands, are an additional safeguard, especially in private practice.

Before treating of actual infections it must not be forgotten that other conditions may cause a rise in temperature. Of these, appendicitis, pyelitis, "milk fever" from overfilled breasts, "reactionary" temperature after protracted labor, etc., may be present, or may co-exist with a genital infection. Of the infections of the parturient canal we must distinguish toxemia caused by the products of putrefactive bacteria, or by the toxins of distinctively pathogenic bacteria. This is a localized process, and the only one, with one exception, in which intrauterine treatment is of value. Bacteremia is a generalized process, in which the germs circulate in the blood. Here intrauterine treatment, in the form of a gentle douche, will do good only in the cases in which a superficial necrosis (a pseudomembrane) forms. The best rule is to consider all cases toxemic until the contrary is proven. Manipulation usually increases the rise of temperature; therefore interference should be conservative. After emptying the bowels and excluding the breasts as a cause for fever, a gentle douche of saline solution is the best means of cleansing the uterus. The cervix should be exposed, the vagina irrigated, and then a double current catheter passed by sight, into the uterine cavity. If the douche brings away debris but the temperature persists, Cragin explores with the finger or very gently with the curette. No more than one douche each day is given. Sometimes fever is caused late in the second week by retained lochia, due to ante- or retroflexion; here a hot vaginal or intrauterine douche relieves the trouble.

In bacteremia, which is best diagnosed by finding the treatment of toxemia fruitless, and by the appearance of a pseudomembrane on the cervix or on vaginal abrasions, our treatment should be directed toward improving the general condition. Locally we should content ourselves with ascertaining that no accumulation of pseudomembrane occurs (by giving gentle intrauterine douches). Alcohol and strychnin have proven of greatest value among the drugs; an ice bag over the fundus, with or without drugs favoring uterine contraction, seems of value; unguentum Crédé and injections of collargol may be of use, but their effect is difficult to judge. A large saline enema occasionally is of use. Antistreptococcic serum has proven a great disappointment.

Radical pelvic operation is indicated only in the rare instances in which the uterus is studded with abscesses. In cases of toxemia operation is not justified, in bacteremia it does not reach the bacteria in the blood, and it greatly reduces the patient's general resistance. Pyosalpinx late in the puerperium may require removal. In case of general suppurative peritonitis the writer has been unable to save a single case by operation. Pelvic cellulitis subsides of its own accord, or if suppuration takes place the abscess can be opened per vaginam.

Phagocytosis and Opsonins. L. HEKTOEN, Chicago. *Journal of the American Medical Association,* May 12, 1906.

The importance of certain substances demonstrated in the blood and other fluids by Wright and Douglas, and called by them opsonins, and which render various bacteria susceptible to the phagocytic action of leucocytes, has given a fresh interest to this subject. It may be accepted as an established fact that phagocytosis of many bacterial and other cells is dependent on these special substances, normal and immune, which become attached to them and change them in some way so as to make them readily taken up by polynuclear leucocytes. Their action is specific, and they exist in normal blood capable of acting on various pathogenic and non-pathogenic organisms. Special opsonins can also be produced by the introduction into the organism of foreign cellular matter, and the mechanism seems much as in that involved in the production of other more familiarly known antibodies, and a number of facts are referred to, indicating that they act primarily on the bodies to which the animals have been immunized and not directly on the leucocytes. The effect of certain infections in increasing the opsonins and the effect of heat on the vitality of these substances are also noticed. Little seems to have been done as yet, Hektoen says, in the production of specific antiopsonins, but it has been found that phagocytosis can be diminished by a number of chemical substances. The experiments of Hektoen and Ruediger indicate that this action is essentially on the opsonin, which they prevent from acting on the bacteria. Such non-specific antiopsonins may be important factors in the spread of certain infections, and it is perhaps in this direction that we should seek a better understanding of the so-called lessened vital resistance, and it would seem unwise therefore to inject into the tissues in diseases in which the defense depends on phagocytosis, such agents ar formalin and others that possess antiopsonic properties. The reasons why opsonic action of normal and immune serum may be regarded for the present as connected with distinct bodies is summarized as follows: 1. Normal serum may possess lytic power but not opsonic, and *vice versa.* 2. Immunization may give rise to opsonic substances, but not to lytic or agglutinating. 3. Heat may destroy opsonic power while the lytic amboceptors remain intact, and *vice versa.* The structure of opsonins and their mode of action are discussed, and from all the facts, the action may be assumed to be in so changing bacteria and other cells that these, by chemical or electric (or possibly by mechanical) means, diminish the surface tension of leucocytes and thus cause phagocytosis, or in other terms, substitute positive for negative chemotaxis. On the whole, it seems to Hektoen that the studies of opsonins and phagocytosis place Metschnikoff's general theory, hitherto perhaps generalized too much, on a more substantial basis. The practical and therapeutic importance of these studies is discussed and the article concludes with a reference to and brief account of Wright's method of therapeutic inoculation of vaccines in tuberculous infections.

The Radiographic Findings in Carcinoma of the Stomach (*Ueber radiologische Befund bei Magenkarzinom*). E. SCHÜTZ, Vienna. *Wiener Klinische Wochenschrift,* No. 14, 1906.

By means of bismuth emulsions the normal action of the stomach has been studied. Special attention has been concentrated upon the movements of the antrum pylori. Six cases of carcinoma of the stomach showed inaction of the central portion after ingestion of the bismuth mixture, which can be observed through the fluorescent screen and can be distributed by means of effleurage. In some cases of pyloric tumor the pyloric end of the shadow is irregular, elongated and wavy in outline. On pressure, the shadow assumes the form of a ring with a light center, where the tumor projects into and displaces the bismuth mass. Schütz concludes that our experience as yet is too incomplete to diagnosticate a cancer by means of these findings, as other conditions might produce similar pictures, but he hopes that this method can be elaborated and eventually will be of still greater value.